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ABSTRACT

This book presents 24 papers dealing with learning theory and its application at the postsecondary level, many stemming from the ideas of Robert Sternberg and Howard Gardner. Articles include: (1) "Introduction" (Richard Kelder); (2) "Teaching Variability in Problem Solving" (Patricia D. Stokes); (3) "Cognitive Theory and Teaching Critical Thinking: The Lawyer's Approach to Postsecondary Education" (Stephen Schoeman); (4) "Is There a Fit Between Critical Thinking Theory and Cognitive Theory" (William R. Brown); (5) "Assessing Assessment" (Judith Entes and Richard L. Larson); (6) "Wrestling With Angels" (Gayle Whittier); (7) "Food For Thought: Writing and the Domain Beyond the Cognitive" (Alice G. Brand); (8) "Crossing Academic and Social Boundaries Through Technology" (Marcia Birken and Anne C. Coon); (9) "Multimedia Instruction: One Solution to the Development of Diverse Learning Environments" (Jeanne Buckley); (10) "Liberal Education and the Implicit Curriculum: Faculty Response and Responsibilities" (Dana S. Dunn, et. al.); (11) "A Student-Centered Pedagogy: Collaborative Learning, Assessment, and Retention" (Carol Ann Dalto et al.); (12) "Reconfiguring Knowledge Relations: A Department's Self-Study Project" (Mark Zuss); (13) "Assessment of Mathematical Problem Solving: Strategies for Teachers" (Elaine Kolitch and Elaine Hofstetter); (14) "Portfolios: Emerging Voices" (Harriet Fayne and Nancy Woodson); (15) "Gateway Psychology at Rutgers: Addressing Retention in a Content Course" (Gary M. Parilis et al.); (16) "Innovations in Group Modes for Adult College Students" (Miriam Tatzel); (17) "Inner Visions/Outer Visions" (Nancy King); (18) "Ways of Knowing in Education and Diverse Learning Styles" (Maxine Morrin); (19) "The Artistic Process: A Model for Teaching and Learning" (Kristin Rauch); (20) "Learning About Thinking by Thinking About 'Art'" (Stephen W. Shipps); (21) "Masks and Maskmaking: Reading and Writing. A Kinesthetic, Learner-Centered Approach for High-Risk Students" (Emma Zevik); (22) "Less is More: Applying Caleb Gattegno's "Words in Color" to Language and Literacy Learning on the College Level" (Bill Bernhardt et al.); (23) "Cultivating Multiple Intelligences Through 'The Living Journal'" (Christian Koontz); and (24) "Creativity Enhances Learning in College Classes: The Importance of Artists and Poets" (Ronald R. Cromwell). (Individual chapters contain references.) (NAV)

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THEORIES OF LEARNING: TEACHING FOR UNDERSTANDING AND CREATIVITY

SELECTED PAPERS FROM THE FOURTH ANNUAL CONFERENCE OF THE INSTITUTE FOR THE STUDY OF POSTSECONDARY PEDAGOGY

1994

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1994

EDITED BY
RICHARD KELDER, DIRECTOR

THE INSTITUTE FOR THE STUDY OF
POSTSECONDARY PEDAGOGY
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The Institute for the Study of Postsecondary Pedagogy

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INTRODUCTION

Four years ago I began to rethink how and what I taught in relation to who my students were as learners. First of all, I found that my instructional repertoire was being challenged by teaching students from diverse academic backgrounds and cultures. Something was amiss, and I concluded that I needed fresh insights and new directions. In reading the literature in the areas of creativity, learning theory, and critical thinking, I discovered the work of Robert Sternberg and Howard Gardner, and both not only deepened my understanding of learning and creativity, but also enabled me to sharpen my focus on integrating learning theory, pedagogy and content. Sternberg showed me how knowledge acquisition is related to performance criteria, namely that what students do with knowledge is as significant as what they know. Gardner provided me with an understanding of the diverse ways that students process information as a result of their cognitive strengths and "intelligences" as well as their learning styles.

These new perspectives shifted my attention away from curricular content to examine the issues and questions about how students learned and processed domain-specific knowledge and to assess which instructional methodologies and pedagogies would best maximize students' learning potential. In addressing these sets of problems and issues, I found myself by logical extension committed to rethinking how I evaluated and assessed student learning. Shortly thereafter, I began my experimentation with portfolio assessment. Needless to say, my teaching and curricular approaches changed dramatically, as did the nature of my assignments.

Acting like one of the newly-converted, I wanted to share my discoveries with others, so I wrote to Robert Sternberg at Yale and invited him to speak at the Institute's 1994 Conference on "Theories of Learning: Teaching for Understanding and Creativity." He accepted my invitation and in November he opened the conference with a one-hour address followed by two workshops on thinking and learning styles which were informative, provocative, and well-received. Howard Gardner, who could not accept my invitation because of a prior engagement, recommended two Research Associates at Harvard University's Project Zero, Shari Tishman and Heidi Goodrich, who conducted a workshop on "A Dispositional Approach to Teaching and Assessing Thinking." After this exceptional opening, the next two days proved to be productive and stimulating.

The content of this publication is a sampling of the papers and workshops that were presented at the conference. As revealed by the content, many conference presenters have been influenced by Sternberg and Gardner's work as well as that of other prominent learning theorists. The conference provided participants with a host of workshops and presentations on multiple intelligence theory and assessment; teaching creativity in the arts and humanities; creative problem-solving strategies; critical thinking and the law, the sciences, and the humanities; modeling the artistic process in teaching and learning; using metaphor in assessing "expertise;" and using portfolio assessment across the disciplines.

I want to thank each of the authors and my colleagues at SUNY New Paltz who, through their commitment to the Institute, continue to demonstrate an enthusiasm for improving postsecondary instruction and developing student-centered pedagogical and instructional models.

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Teaching Variability in Problem Solving

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Variability rather than creativity is in the title of this paper because creativity is a kind of variability. Being variable means doing something in different ways which may or may not be novel. Since you can be variable without being creative, but not be creative without being variable, the first question to be answered is: what accounts for individual differences in variability?

One possibility is that variability levels or requirements are learned (Stokes, 1995). You might have a higher variability level in painting than in math, or the reverse, because along with acquiring a skill repertoire — learning how to paint or solve an equation — you also learned how to do it differently.

The title, sans creativity and in reverse, provides an outline for developing this argument. The first two parts are theoretical. One is a primer on problem solving; the second, a discussion of variability levels and criteria. The third presents data that demonstrate how different types of training, — corresponding to two types of problems with different variability criteria embedded in them — establish different levels of variation. A coda considers the relationship between learned variability levels and creativity.

A Primer on Problem Solving.

The Artificial Intelligence literature (Greeno & Simon, 1988) defines a problem space as how a problem is represented by a solver. Problem spaces have three parts: an initial state — where you start from; a goal state — where you go to, along with a criterion for knowing when you get there; and a set of operators that structure the problem. Operators take the form of 'If, then' rules. The more operators, the more paths available from the initial to the goal state.

Not all problems come with the three parts specified. Those that do are called well-defined. Paint-by-number is a well-defined problem. The initial state is a canvas with a numbered cartoon and a set of numbered paints. There's one basic operator: if the number in an area is '1', then fill that area with the paint numbered '1'. Applying the operator recursively, repeatedly, you reach the goal state — the criterion for which is matching the picture that comes with the paint-by-number set.

Notice, since the operator and goal criterion are given, even beginners don't have to try many things (i.e., don't have to be very variable) to solve a paint-by-number problem. As a solver becomes more expert, she adds operators. An early addition might be the 'Do one color at a time' rule: if you start with red, then fill in all the reds before you use yellow. A later one could further specify the goal by establishing the rule 'All brush strokes go in one direction', like Cezanne, or 'Brush strokes follow the form of objects', like Van Gogh.

Since operators structure the problem space, paint-by-number becomes more structured with expertise. Figure 1 shows that the structure of a problem (high or low) depends on the skill level (high or low) of the solver. Any place along the diagonal, a particular level of expertise corresponds to a particular level of structure.

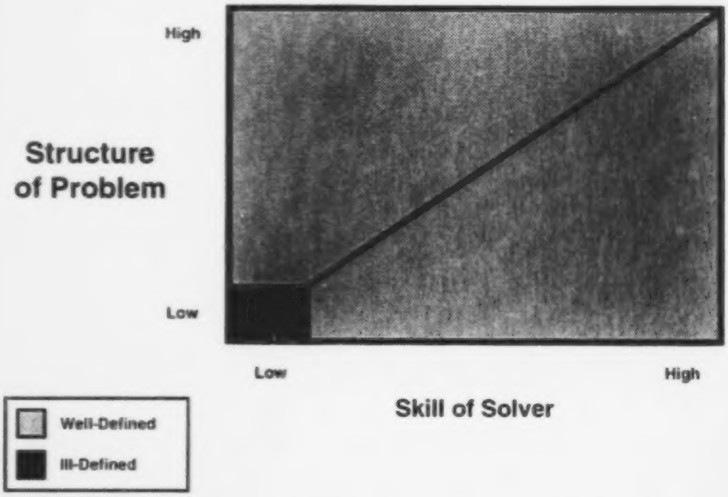

Figure 1. Level of skill level determines level of structure in both well-defined (light area) and ill-defined (dark area) problems.

The light area represents well-defined problems that have, at minimum, a clear goal criteria and a basic operator. The black area, where skill and structure are lowest, represents ill-defined problems. An ill-defined problem does not have a clearly specified goal criteria. When beginners (children, students, novices in a domain) ask 'Is it OK? How am I doing?', it's because they don't know.

Sometimes, experts don't know either. This happens when an expert is attempting to respecify the goal criteria in a domain. For example, an ill-structured problem for Picasso and Braque was painting a still life from several simultaneous viewpoints. In 1906, neither artist knew what would make a successful Cubist painting successful. However, by 1914, the goal state for representational painting had been redefined: paint what you know instead of what you see.

Two things should be noted in both the case of the beginner and of Braque: many rather than a few things must be tried to reach a solution, and, ill-defined problems become well-defined ones. Since solving well-defined problems requires doing few things, does this mean that variability decreases with expertise?

Not necessarily. In studies that compare expert and novice performance, experts generate as many or more possible solutions than novices. For example, in sorting physics problems into categories, experts generate different rather than fewer categories (Chi, Feltovich & Glaser, 1981). In studies that track development of expertise within subjects, the number of strategies does not diminish; rather, the distribution shifts to more sophisticated or efficient strategies. This happens with young children learning to add (Seigler, 1994), as well as with college students learning to program in LISP (Anderson, 1993).

Learned Variability: Levels and Criteria

Since variability doesn't decline, something besides skill is being acquired. I call that something else a variability level, informal evidence for which can be provided by any reader of this paper. Put in a situation where the variability requirements are subjectively too high, you feel the discomfort labeled anxiety; put in one where the requirements are too low, you experience the discomfort called boredom. Discomfort levels motivate individuals to regain their accustomed levels of variation. Levels differ between individuals and between domains because they are learned.

What underlies this kind of learning? Perhaps variability criteria, which make reinforcement contingent on how differently a task is done (Neuringer, 1993). Such criteria can be explicit or implicit. Creativity training involves explicit criteria. For example, in divergent thinking training, the goal is a high level of variability, which is explicitly rewarded. The side effect is skill acquisition in the training domain (Baer, 1994).

Implicit criteria do not make reward directly contingent on variation, but rather are embedded in training procedures. The explicit goal is skill acquisition.

The side effect is high or low variability. Whether the criteria is high or low depends on how the skill is taught.

Training for Variability.

A recent study manipulated training methods and the number of training steps to generate different implicit criteria (Stokes, Mechner & Balsam, 1995). The methods, shaping and instruction, were chosen in part because Joyce and Chase (1990) showed that training with completely specified instructions generates lower variability than training with incompletely specified ones.

In problem solving terms, a high level of specificity (I tell you exactly how to earn points) corresponds to a well-defined problem. Since a well-defined problem doesn't require trying many things to solve it, reward often follows a current response that is quite like, or even the same as, a prior one. Being reinforced for doing the same thing means that a low implicit variability criterion is in effect.

The opposite is true of an ill-defined problem. A low level of specificity (you have to figure out how to earn points) indicates an ill-defined problem. If solving it requires trying many things, reinforcement will often follow responses that are different from prior ones. Thus, the implicit variability criterion will be higher.

The hypothesis behind the two methods was this: if shaping (the ill-defined problem) involved higher implicit variability criteria, subjects who were shaped should acquire higher variability levels than those who were instructed. The alternative idea was based on number of training steps: the more steps, the more specific responses subjects might learn to make. In this case, variability could be based on size of repertoire. (If you learn and continue to do 4 things, you'll be more variable than if you learn 1 thing).

Subjects (Barnard and Columbia college students) were either instructed by the experimenter or shaped by the computer; the number of steps involved in reaching the target response was either 1 or 4. The target for all groups was the same: a press of the Space bar followed by at least 10 presses on any combination of eight exposed alpha character keys and a press of the Enter key. In the instructed groups, subjects were told what to do. In the shaped groups, visual feedback guided responding. In the 1-Step groups, the target was acquired in one step: i.e., 10 points were earned for at least 10 alpha keypresses. In the 4-Step groups, 10 points were earned for at least 1, 3, 6 and finally, at least 10 keypresses. All subjects earned 250 points for correct target sequences. If more steps lead to greater variability, the 4-Step groups would be more variable than the 1-

Step. If more structure leads to less variability, then the instructed groups would be less variable than the shaped.

Uncertainty metrics (Attneave, 1959) were used to measure variability. Uncertainty is a function of the likelihood of possible events. The event of interest here is the number of keypresses in a trial. If, in a 25 trial block, the number differed on each trial, each number would be equally probable and uncertainty would be maximal. Departures from equal probabilities reduce uncertainty.

The criterional dimension — the one on which reinforcement was contingent — in the current study was Run Length, the number of alpha keypresses in a trial. As shown in earlier studies (e.g., Stokes, 1995), variability did not decline after acquisition. Once a level is acquired, it is maintained.

This being the case, Figure 2 only presents uncertainties for the last 25 reinforced trials (226 to 250). Both component (e.g., What is the probability of a Run Length of 10?) and sequential (e.g., What is the probability of a Run Length of 10 being followed by a Run Length of 9 or 11?) uncertainties were significantly higher (ps<.05) in the group shaped in 4 steps.

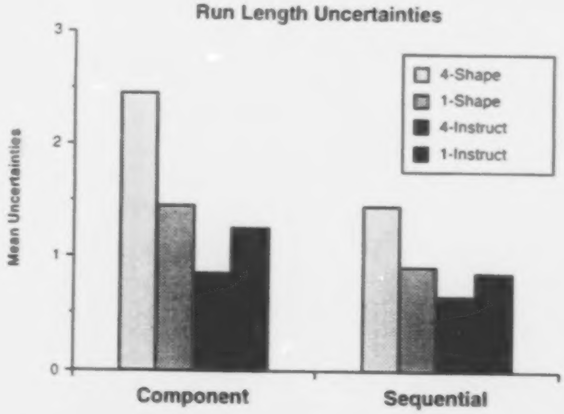

Figure 2. Mean component and sequential uncertainties in Run Length for the 4-Shape (light gray bars), 1-Shape (dark gray bars), 4-Instruct (bars with narrow stripes) and 1-Instruct (bars with wide stripes) groups.

Since this was not what we predicted, an alternative model, based on shifts in the type of problem solved early in the training, was developed. Before acquisition, both shaped groups were solving ill-defined problems; both instructed groups had well-defined ones. As shaping proceeded, differential reinforcement selected responses which met the criterion, thus specifying the goal and ways to to meet it. As soon as subjects in the 1-Shape group acquired the target, their problem became well-defined, making them like the instructed groups in which repetition rather than variation sufficed to earn points. In the 4-Shape group, the criterion continued to change, reinstating an ill-defined problem at each step. Since variation was necessary to keep earning points, a high implicit variability criterion was in effect longer during shaping.

Support for this interpretation comes from two additional pieces of data. Remember, a high variability criterion requires that current responses differ from prior ones. During acquisition, there were more shifts to different Run Lengths in the 4-Shape group, and more to same Run Lengths in the other three groups. Since the 4-Shape group also generated more different Run Lengths during acquisition, higher variability after acquisition could be due to maintaining these earlier, shorter Run Lengths. This was not the case. At the end of training (last 25 reinforced trials), the 4-Shape group had few Run Lengths under 10, 21% at 10 and 68% over 10.0. Responding in the other groups centered at the target, 10.

It looks as if repeatedly reinstating ill-structure generates high variability. If this is true, then holding the number of steps and target Run Length constant, there should be no difference if step sizes increase, decrease or stay the same. To examine this possibility (Stokes & Balsam, unpublished data), two additional groups were trained. The 4-Shape group had been shaped with targets (1, 3, 6, and 10) of increasing step size (+2, +3, +4). The new groups were shaped with equal (targets:1, 4, 7 and 10; all steps +3) or decreasing steps (targets: 1, 5, 8 and 10; steps: +4, +3, +2). There were no declines in uncertainty after acquisition and no differences between groups.

Coda on Creativity.

The current studies, as well as prior developmental ones (e.g., Seigler, 1994), support the idea that variability levels, and by extension, boredom thresholds, are acquired. When you get bored in an area depends on a learned variability requirement in that area. Look again at Figure 1. Along the diagonal, skill matches structure. Problem solving is rewarding, intrinsically via self-reinforcers like competency, or extrinsically via reinforcers like status and salary. Responses that are reinforced tend to be repeated — this is the definition of an operant: a behavior whose frequency depends on its consequences.

The consequence here is that people get stuck in successful solutions. If getting a grade or a promotion requires doing the same sort of thing, the same thing will get done — unless boredom becomes too aversive. A low boredom threshold can move you along the diagonal through the well-defined part of Figure 1. To deal with more difficult problems, you increase your skill level, which structures the problem at a higher level. With expertise, and multiple operators at your disposal, it's simple to vary your solution path. If you get bored easily enough, you might go back to the beginning and, like Picasso and Braque, redefine the goal state for your domain. Notice that novelty is possible at all levels; whether we call the novelty creative depends on whether we are evaluating it within an individual or within a domain.

The final issue is a developmental one. Who beside a Picasso do we all call creative? Very young children, working with ill-defined problems. Not only is learning to walk or talk ill-defined, but the child is initially rewarded for doing these tasks differently. However, once Amy walks and talks and colors inside the lines, reward comes to follow reliability, unless she is selected out as being special in some domain.

If you ask successful artists why they became artists, the answers are alike: I was special because I drew better than anyone else, i.e., I did something differently. To stay special, they continued doing it differently. If Amy's mom and dad evaluate her scribbles as artful, art supplies and lessons and reinforcement for doing it differently remain abundant. Amy has a good chance of being creative as an adult.

If on the other hand, Amy isn't special in any one thing (but she is special), Mom and Dad may sign her up for lessons in everything. Amy will become well-rounded: a little piano, a little painting, a little ballet. Amy has a good chance of becoming a dilettante — someone who maintains variability by doing different things rather than by doing the same thing in different ways.

The conclusions important to creativity are two. First, creativity in children seems to stem from ill-defined problems and high variability criteria (implicit reinforcement for doing it differently). For exceptionally creative adults, it may well depend on ill-defined problems plus high learned variability levels acquired when they were children.

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Dr. Patricia Stokes, who now does research on learned variability at Barnard College, was previously a creative group head/director at several major New York advertising agencies, where she was responsible for generating highly variable behavior on a regular basis.

COGNITIVE THEORY AND TEACHING CRITICAL THINKING: THE LAWYER'S APPROACH TO POSTSECONDARY EDUCATION

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THE PROBLEM: THE NEED FOR CRITICAL THINKING

"Memory should not be called knowledge. Many have original minds who do not think it-they are led away by Custom. Now it appears to me that almost any Man (or Woman) may like the spider spin from his (or her) own airy Citadel..."[1]

"But how it is possible that a soul rich in the knowledge of so many things should not thereby become keener and more alert... We labor only to fill our memory, and leave the understanding and the conscience empty... We take the opinions and the knowledge of others into our keeping, and that is all... We let ourselves lean so heavily on the arms of others that we annihilate our own powers."[2]

People who lack critical thinking skills run the risk of losing their ability to govern themselves. Statements which are not challenged or analyzed because people do not know which questions to ask may become facts to them. Without the ability to evaluate the world about them critically they eventually lose the ability both to define problems and to find solutions.

Citizens are continually asked to analyze statements essential to be understood if proper electoral decisions are to be made. How are citizens, for example, to understand this statement? "Gov. Mario Cuomo and his Republican challenger, State Senator George Pataki, agree on one thing. The current legislative process in Albany is a mess."[3] Do Governor Cuomo and Senator Pataki agree? If they agree, why do they agree? What is a legislative process? What does "mess" mean? How does the current legislative process differ from past legislative processes? The newspapers are replete with opinions stated as facts. The distinction between opinion and fact is lost if people do not have the critical thinking skills to challenge the opinions.

Perhaps in response to the lack of critical thinking skills electoral campaigns are increasingly reduced to the briefest and yet most shallow of campaign advertising. "The 30-second television spot advertisement, basic weapon of the modern American political campaign, is incompatible with the republican form of government that James Madison and his colleagues designed for this country in 1787. So the 1994 campaign has shown us."[4] Aristotle, writing in *Politics*, stated that in a democracy "The *people* ought to decide." Yet "with the growth of the art of rhetoric, men (and women) with the gift of speech are the men (and women) who make themselves demagogues," thereby threatening the ability of the people to decide.[5] We have, therefore, a responsibility to provide students with the skills by which they critically can evaluate any and all statements they hear on the radio, see on television and in the movies, or read.

The increasing frequency with which news stories and history are presented by visual image only makes more urgent the need to develop critical thinking skills. The very immediacy and seeming simplicity of visual images only compounds the problem of developing critical thinking skills. Without these skills, visual imagery can become just another form of propaganda for the particular point of view the image maker is propounding. A movie like *JFK* with its implied assertion that President Kennedy was assassinated by conspirators requires as much if not more critical thinking to understand than any book in which allegations of a conspiracy are made.

There is, however, one group of people in our society who are specifically trained to be critical thinkers. Attorneys make their living by being critical thinkers because without the ability to ask questions and to cross-examine an attorney is like an astronomer without a telescope or a botanist without a microscope. Without critical thinking skills the attorney lacks the tools to be an attorney.

The Difficulty: The Tendency to Accept Statements Uncritically

The *fait accompli* phenomenon of blind acceptance to what is makes application of critical thinking skills all the more difficult. People tend to accept what they know. They tend not to challenge information or data they receive so that knowledge is confused with information. We assume that data we receive is fact. If something is alleged to have happened then it happened. Many people find it easier to live this way. Energy and time need not be expended to analyze data. Reality is comforting because it is stable and predictable. The problem with this view of reality is that it is not a view of reality. It is a construction of the uncritical mind.

The people who believed that *H.M.S. Titanic* was unsinkable and the ship's captain who did not slow the ship down though warned of icebergs in the vicinity were living by their own reality. How could a ship which is unsinkable sink?

Tragically, they failed to ask the critical questions. How can a ship be unsinkable? Is an iceberg stronger and harder than the plating on the hull? Are there any scenarios in which the ship would sink if it collided with an iceberg?

Similar questions might have prevented other disasters. Under what conditions of cold temperature would the o-rings on the Challenger which seal the fuel tank segments fail to provide a proper seal? Under what conditions could the hydrogen in the Hindenberg catch fire and explode? Are structures adequately designed to withstand certain earthquakes hitting Kobe, Japan? The list of cases in which critical questions should have been asked is, sadly, almost endless.

The Solution: Deconstruction

An attorney is a deconstructionist. Deconstruction is the reduction of statements to their individual elements because no statement of fact or theory is taken as true on its face. Each element must be proved before the statement can be accepted as true or plausible. Deconstruction is the fundamental method of cross-examination. It is also a chief way to develop critical thinking skills by forcing the student not just to accept what is said in the lecture or what is written. All too much of a student's work is memorization and the sheer acceptance of information without question and without challenge.

Deconstruction is especially important because of the increasing use of visual image to present information. Watching a visual image is the very opposite of participating in the Socratic method because the viewer is simply a spectator. The visual reality is the only reality the viewer sees. It is precisely the ability of a visual image maker to make the image seem real in a way even the finest novelist cannot achieve that makes the image so potentially difficult to refute. Yet the lawyer would, as the student should, look at the movie with disproving eyes. Statements are considered disproved (not the same as disapproved of) or not proved until proved.

Even more difficult to challenge than visual imagery are statements which appear so authoritative that the very idea of challenging them may be rejected out of hand by the student. A common example is the statement, "Columbus discovered America." The student should be asking a series of questions about this statement. Who was Columbus? What does discovered mean? What is America? What is the New World? The New World is new to whom? Is there a Bering Sea land bridge between Siberia and Alaska? Is there carbon dating of Inca, Aztec, Viking, and other human settlements in the New World? A lawyer does not accept facts unless they are either proven or of such common knowledge that a court can take judicial notice of them. The lawyer need not prove that the Empire State Building is located on 34th Street and Fifth Avenue in Manhattan or that William Jefferson Clinton is the President of the United States of America.

The Lawyer As A Deconstructionist

The lawyer does not build up a case without first tearing it down. There are no assumptions. There are no presumptions. The lawyer starts at ground zero with no evidence. Nothing is accepted as right or correct. Even in cases in which there would appear to be a startlingly great amount of evidence to convict the client, the lawyer assumes the client's innocence. Even where the evidence would seem to establish overwhelmingly that the client was negligent, the lawyer assumes that the client was not negligent. To do otherwise would be to taint the case with presuppositions, perhaps irreparably so. The client would be seen in a most negative light and the truth-finding process would be severely compromised.

Why A Lawyer Must Be A Deconstructionist

Inconsistency. A lawyer who accepts facts may not see inconsistencies which can win the case. One set of facts leads to one conclusion. Another set of facts leads to another conclusion.

Explanation. A lawyer who adheres to a particular theory may be unable to explain all the evidence of a particular case. In this sense, a lawyer is a scientist. No scientist would accept what has not been proven. Furthermore, no scientist would necessarily accept what has been proven. Otherwise, Galileo, Copernicus, Newton, and Einstein would have been stopped in their tracks.

Irrelevancy. A lawyer who accepts all data may use irrelevancy and thus skew the case in the wrong direction.

New evidence. A lawyer who fails to ask probing questions may not uncover new evidence or may not refute existing evidence.

Wrong answer. A lawyer who asks the wrong questions may receive the wrong answer.

No answer. A lawyer who asks the wrong sequence of questions may never receive any answer.

Lose a case. A lawyer who assumes or presumes is a lawyer who will see reality only in terms of the lawyer's assumptions and presumptions and may lose the case.

The Lawyer Is Not An Obstructionist

A common complaint about lawyers is that they are interested in winning at all costs and that the guilt or innocence of the client is irrelevant. Lawyers, it is argued, do not care about the truth but are looking for an excuse or an alibi or some technical flaw in the opponent's case "to get the client off." Nothing could be further from the truth. A lawyer who attempts this is a bad lawyer because the lawyer is not doing his or her homework but is simply looking for "outs."

There is a distinction between deconstruction and destruction. The attorney is a deconstructionist who may also be a destructionist. What the attorney is attempting to destroy is the argument or case of the opponent because the argument or case is logically flawed or factually insupportable. Being a destructionist in this sense is a proper result of critical thinking. The lawyer, however, is not destroying an opponent's case blindly without any rationale or purpose. The lawyer must still build his or her own case and merely destroying the opponent's case may leave the lawyer without any reference points to guide the lawyer in building a case.

A good lawyer cannot consider excuses or alibis or technical flaws without first breaking apart the opponent's case to see if there is anything which makes sense. This very process of breaking down the opponent's case is not obstructionism. On the contrary, it is the ultimate deconstruction without which the lawyer cannot build a good defense or a good offense for his or her client.

The O. J. Simpson case illustrates public befuddlement about the role of trial lawyers. It would appear that there is very strong evidence to convict Mr. Simpson. DNA reports link Mr. Simpson to the crime. There are bloody gloves with blond hairs on them and blood in his house and in his Ford Bronco. There is history of abuse of his wife and, of course, he purchased a knife. All of this is called circumstantial evidence because it is not direct evidence. Direct evidence would be an eye witness account of the crime. Indirect evidence, for example, is linking the defendant to the crime by the bloody gloves.

Why, therefore, should attorneys be defending a person against whom all this evidence is to be presented? The answer is that the job of Mr. Simpson's attorneys is not to accept what evidence is ranged against their client as "a given." The evidence is not "a given." It is no more acceptable than evidence establishing innocence. In effect, the lawyers for Mr. Simpson accept nothing at all. Neither evidence tending to establish guilt. Neither evidence tending to establish innocence.

Mr. Simpson's lawyers begin with the simple lawyerly proposition that they have nothing at all on their desks. They take the view that nothing the prosecutor has is evidence admissible in a court of law. There is no case against their client. If they took the opposite position, they could never properly represent Mr. Simpson. Their views would be tainted, as so much public opinion is, by what they have seen on television or read in the newspapers.

Mr. Simpson's lawyers, all experienced attorneys, know that there are many regrettable cases in which an individual was found guilty, tried, and even executed who really was innocent. They know that defendants have suffered because of the failure of the attorneys to probe further for evidence or because of a failure of legal strategy or because of new evidence discovered later and not available at the time of trial or because the prosecutor withheld vitally important evidence supporting the defendant's innocence. The essential point is that his attorneys know that the reality presented by the prosecutor and by the news media is not the reality upon which they can proceed with the case.

The Lawyer Is Not A Fiction Writer

Another charge against attorneys is that they are fiction writers, fabricating stories or arguments to meet the needs and interests of their clients. Attorneys are not fabricating cases. Rather, they are deconstructing the opponent's case. They are saying that the reality the opponent presents is not the true reality.

Lawyers will say, "My client is innocent until proven guilty." Most people hear, "My client is innocent." That is not the complete statement and wrongly pictures attorneys as fiction writers. "My client is innocent until proven guilty" is the anthem of deconstructionism. A fact is not a fact until it is proven. A statement is only a statement. A theory is only a theory.

The attorney by using critical thinking skills both weakens, undermines, or destroys the opponent's case and builds his or her own case. There may be a proper alibi. The client may not even have committed a crime under the law. The client may not have been negligent. What emerges is a case which may be diametrically at odds with the case of the opponent. Our seeming willingness to accept allegations as facts may make us uncomfortable with the attorney who does not accept these allegations. "How can this attorney represent this client who is so obviously guilty?" We hear variations on this theme all the time. The point is that allegations are only allegations until proven.

How A Lawyer Becomes A Deconstructionist: The Socratic Method

Law school trains students "to think like a lawyer." To think as a lawyer thinks is to think as a deconstructionist thinks. The law student is trained to think critically and logically about the world and about the particular case at hand. The primary method used to train law students is the Socratic method in which the law professor through rigorous questioning requires the law student to provide logical justification for a particular position. Years of this training make attorneys particularly well equipped to ask questions. The very stock in trade of an attorney is the knowledge of the questioning process and what questions to ask and when.

A law professor might pose a hypothetical question about reasonable compensation in a case in which a stockholder sues the corporation claiming that its president and chief operating officer are being paid an unreasonably high salary. The law professor knows that some of the students may believe that there should be no limit to what a person can make and that other students may believe just the opposite. The law professor must force the students to think about reasonable compensation rather than to give voice to their own particular beliefs. A student who believes in unlimited compensation must be able to justify this position. So must the student who believes in limitations on compensation.

The law professor asks increasingly pointed questions which require the students to rethink their positions. What is reasonable? Why shouldn't the executive of a company make $50,000,000 or $100,000,000 or any amount? Don't we want to reward success? What is success? Should we set compensation at $50,000? What happens if the competitor sets compensation at $5,000,000? How big is the company?

The questions force the student to think about what to answer. Perhaps the student never thought about the issue. Perhaps the student has a set opinion that the sky is the limit for corporate executive compensation. Perhaps the student has a set opinion that compensation should be no more than twenty times the salary of the lowest paid employee. What the student thinks or believes or feels is irrelevant. What is relevant is that the student think about the problem and logically come to a conclusion.

The Socratic Method Is Not Passive. The student cannot be a passive listener, a spectator, when using the Socratic Method. The teacher is asking the student to think. The student is not just receiving information. The teacher is not just imparting information. Indeed, the primary purpose of law school education is not transmitting information. Rather, the student and the teacher together as equal partners are groping for answers.

The Socratic Method Is Not Subjective. The Socratic Method is an *intellectual exercise in which ideas*, not feelings, are debated. The information we receive from our environment may be based on our senses. How we view this information is colored by our feelings and emotions. What we do with this information is or should be based upon reason and logic.

The lawyer draws a distinction between what we feel and what we think. The famous line from the old television series Dragnet says it all. "The facts, ma'am." Feelings must be irrelevant in the jury room. The juror can only be permitted to think according to specific legal guidelines laid down by the trial judge. The defendant may be the most despicable person in the world worthy of nothing but the utmost contempt and even hatred. Yet the juror must put aside such feelings and logically decide based upon the evidence admitted in the trial and the law whether this person should be convicted.

Applicability. The Socratic method is primarily intended for the discussion and exploration of ideas and principles. What is justice? What is beauty? What is truth? What is government? What are the causes of war? What were the causes of the First World War? Still, the method can be employed for more particular or narrower subjects. The sun rises at 6:30 A.M. this morning Why? George Washington crossed the Delaware River just above Trenton, New Jersey. Why?

A political science teacher might simply state, "The legislative branch of the British Government is Parliament." Or, the teacher could deconstruct the word parliament into the French parler to speak. What does to speak mean? Why not use the word to discuss or to consider or to inquire or to talk? What is special about the word to speak? The student is forced to consider the word parliament as more than an abstraction. By seeing the origin of the word the student may gain a greater understanding of a major function of parliament.

Additional questions bring out the historical origins of parliament even without the student knowing the historical facts. What is the importance of speaking? Why would you want to speak? About what would you want to speak? Would you want other people to listen to you and to act upon what you said? What would you want done? What would a person want to speak? Suppose you said something the sovereign ruler did not like? Would you want to speak in a place where you felt you could be safe speaking?

How might a teacher compare the British Parliament with the United States Congress? What is the origin of the word parliament? What is the origin of the word congress? What does the British Parliament do? What does the United States Congress do? Why do Americans use the word congress and not the word parliament?

Now the student is confronted with a problem. If both the British Parliament and the United States Congress have similar functions, then why do they have different names? The student may then be led into a discussion which cuts below the surface functions of these two legislative institutions to consider some other possibilities?

> If you were an American revolutionary, would you want to use parliament as the name of the Federal legislature?
>
> How is the British Parliament different from the United States Congress?
>
> Is the party system as strong in the United States Congress as it is in the British parliament?
>
> Do party members in Congress have more freedom to vote against party leadership positions than party members in Parliament?
>
> Do members of Congress come together to speak or debate policy?
>
> Do members of Congress come together to resolve their differences?
>
> Is legislative policy set by the parties before it is submitted to Congress?
>
> Are the Senate and the House of Lords analogous?
>
> Are the House of Representatives and the House of Commons analogous?

By using the exercise of deconstructing the words congress and parliament, opportunity is presented for this line of questioning as a logical consequence of the deconstruction.

The teacher might be more specific and raise a series of questions around the word commons as in the House of Commons? The teacher might ask the difference between commons and lords as in the House of Lords? Why does the United States Congress consist of representatives and senators while the British parliament consists of commoners and lords? In a democracy what roles should the House of Commons and the House of Lords play? An almost endless series of questions can be asked which make the student think about the subject at hand. No fact is to be accepted without critically thinking about the fact.

When A Lawyer Is A Deconstructionist

The art of being an attorney is asking questions which lead to a fuller and more accurate understanding of reality. Every time a lawyer asks a question the lawyer is a deconstructionist. The trial attorney who cross-examines the witness who is hostile or opposed to his client is being a deconstructionist. The attorney who asks questions to help develop an estate plan for his or her client is being a deconstructionist because all aspects of the client's financial life are examined and challenged.

Lawyers are not expected to have answers. That is not what they are trained to do. They are trained to ask questions. Some questions, as we know, are so devastating, so wilting in their impact, that clients and witnesses soon cave in and tell a different story. The questions are not asked in a cynical attempt to deny reality but rather in an inquisitive attempt to find out what really happened, may have happened, might have happened or did not happen at all, could have happened, should have happened, or would have happened.

Why The Teacher Must Think Like A Lawyer

The attorney has two roles in a trial. One role is to convey information. In this sense, the lawyer is attempting to educate the jury and the judge. The lawyer wants them to understand the lawyer's position, the issues the lawyer is raising, and the facts the lawyer is trying to prove. The lawyer, in a sense, has a lesson plan just as a teacher does. The lawyer calls this lesson plan trial strategy.

The other role, often more important, is to prevent the conveyance of misinformation. Likewise, a teacher has two roles. One is to convey information. The other, not as often stated though assumed when grading tests, is to prevent the conveyance of misinformation. The problem is how misinformation originates. It is often not a question of the student not doing his or her homework. It may be a question of the student having misconceptions or applying illogical thinking to a problem. It may also be that the student is not inquisitive.

The interrogatory techniques of an attorney can force the student to think about what the student says and thinks and feels and writes down on a test. The student is given no other choice. Jurors often find the trial a rigorous and difficult experience precisely because they are forced to think in unaccustomed ways and to leave aside predilections, prejudgments, customary attitudes, and whatever else comprises a "closed" mind. They are instructed by the judge about what they may weigh in evidence and what they must disregard. They are instructed to conduct their factual analysis according to specific legal rules and procedures. The art of questioning they learned from the attorneys in the trial is applied by the jurors in the jury room where members of the jury demand rigorous and logical thinking. In Twelve Angry Men, one juror, terribly unpopular at first for holding out against conviction, eventually persuades the other jurors by sheer logic that the evidence is insufficient to support conviction.

The interrogatory questions can force the student to become inquisitive. The student can no longer be a passive recipient of information because information is no longer given to the student. What is given to the student are questions about the subject matter. It is no longer Columbus "discovered America in 1492." It is what does discovery mean. It is no longer just that Rossini's last opera was William Tell. It is why was this his last opera even though he lived another thirty-nine years.

Any teacher who has prepared a week's worth of lectures only to use up the material the first day knows what it is like to lecture to a class where students ask few if any questions. Why, the teacher asks, do the students not ask questions? Why is there so little controversy in the class? The answer is that the students are not being forced to think. They are simply permitted to enjoy the age old tradition of sitting passively and writing often meticulous notes about what the teacher is saying. They know that these notes are the key to a good grade. The student focus is upon learning information for the quiz, mid-term, and final examination. Asking questions only defeats the student's purpose in being in the classroom. Questions create doubt and doubt may make the student uncertain as to what or how to answer the test questions. Less effort is required to memorize "facts" than to think about questions. It is easier to answer that France was an ally of the American revolutionists than to ask why.

Students cannot be fully faulted. Teachers often use multiple-choice tests to test for factual knowledge. Teachers still widely lecture. Teachers still grade students upon the amount of information they have acquired. The tradition of education as a process in which information is given or presented is very much alive. Sometimes this tradition serves the valuable function of forcing students to learn grammar or to learn the chemical elements. Many times, however, the tradition helps the teacher and the student avoid the critical inquiry which is also part of the educational process.

How The Student Benefits From The Teacher Applying A Lawyer's Approach To Teaching

Students are kept on their toes. The student cannot sit back and simply receive information from the teacher. The student knows that he or she may be asked questions, often pointed questions which require a logical response.

Students see the teacher as a student as well. The Socratic Method requires that the teacher also be a student. Teacher and student learn together.

Students feel part of a creative process. As the dialogues in any part of Plato's works demonstrate, the student, in being part of the Socratic process of learning, sees a visible if not a tangible result. The student sees that he or she has come to a conclusion based upon thought and reasoning.

Students develop reasoning ability. Reasoning is not a natural capacity. It must be learned. Students learn how to think logically about problems from the logical progression of questions that the teacher asks.

Students are not bowed down by what went before. The student "re-invents" knowledge. A prime example is the French Impressionists. Manet, Pissaarro, and Monet broke with traditional theories of painting. They experimented with new interpretations of light and color in new settings. The suggestion is not that the student disregards the past but rather that the student re-evaluates it.

Students are less likely to be bored. Memorizing facts is not most student's idea of fun. Questions are an important intellectual change of pace. Students see education not as drudgery.

Cross-Examination Is The Lawyer's Tool Of Deconstruction

A trial attorney uses cross-examination to elicit truth and to persuade the jury. In the case of the student, the teacher should use the question to elicit the truth and to persuade the student that there is another point of view or that the student is incorrect.

Cross-examination is the preferred tool of deconstruction. Direct examination, while valuable, is more an effort to establish the plaintiff's case or the defendant's case. Cross-examination functions to challenge what the witness has just stated at the trial or hearing or said in a deposition.

The cross-examiner approaches the witness with a far more skeptical attitude than the direct-examiner. It is not that the lawyer believes the witness is lying though that may be what the lawyer in some cases actually believes. Rather, the lawyer attempts to show that the witness for whatever reason is not testifying to the reality of the case but only to the witness's perception of that reality. The witness may be lying. The witness may be an interested party paid by a litigant to take a certain position which is often the problem with expert witnesses. The witness may have a poor memory. The witness with less than 20/20 vision may not have been wearing prescription glasses when the witness claimed he or she saw the accident.

To Reveal A Mistake. A student may be giving the wrong answer. The student may be making the wrong assumption. The student may be reaching the wrong conclusion. The purpose of the question is to reveal the error to the student by forcing the student to see the error. It is far easier to state the error to the student. The educational challenge is to ask questions which help the student see the error. Rather than say, for example, that the student is wrong to state that President Franklin Roosevelt and Prime Minister Winston Churchill held personal meetings in New Delhi, India, the teacher might ask a series of questions to help the student give the correct answer. In what building was the meeting held? When was the meeting held? What was the purpose of the meeting? What was decided?

To Reveal Contradiction. The student states one point and then later states another point which contradicts the first point. All trial attorneys hope for witness contradiction. For example, the student states that the Pax Britannia was a century of world peace. The student also states that British colonial policy toward Africa included annexing Boer territory in South Africa. The student has made inconsistent statements. The Pax Britannia could not have been a century of world peace because there was the Boer war. Questioning of the student might lead the student to conclude that the Pax Britannia was a century of relative world peace or might lead the student to conclude that the Pax Britannia was not even a century of relative world peace. The teacher would want to explore the meaning of peace and war.

To Reveal An Incredible Assertion. The student may make a statement which is unfounded or is illogical or unreasonable. The student may not realize the weakness of the statement. For example, the student states that Napoleon sold the Louisiana Purchase to the United States for fifteen thousand dollars. The teacher could just tell the student that the correct answer is fifteen million dollars. Another approach would be to force the student through questioning to see that the student's answer is wrong. How large in area was Louisiana in 1803? What was the value of all goods and services sold in the Louisiana territory in 1803?

What would today's dollar have been worth in 1803? Would Napoleon, given these statistics, have sold the Louisiana Purchase for fifteen thousand dollars?

To Reveal Concealment. Cross-examination ferrets out concealed information. Parties in a lawsuit tend to state only their side of the case. The plaintiff never did anything wrong and was not contributorily negligent. Upon cross-examination it appears that the plaintiff was as inattentive to the road as was the defendant. Concealment need not be intentional. The student states that Napoleon sold the Louisiana Territory to the United States because Napoleon needed fifteen million dollars. The student fails to understand, in making this statement, more fundamental reasons for the sale. "The collapse of the venture in Santo Domingo (to control the island) and the imminence of war with England determined him to sell Louisiana to the United States rather than run the risk of losing it completely to the English"[6] The teacher would want to ask questions exploring Napoleon's role in Santo Domingo and Napoleon's relations with England.

To Reveal A False Factual Conclusion. A student, having just seen the movie Amadeus, concludes that Salieri murdered Mozart. Or the student just saw the movie JFK and concludes that the President was killed as a result of a conspiracy. In either case, the student makes a factual conclusion without factual proof. Possibility, probability and likelihood are confused with actuality. The cross-examiner reveals the lack of evidence sufficient to establish the fact of something having happened. The cross-examiner may not even be trying to dismiss the possibility that Salieri murdered Mozart or that President Kennedy was assassinated by conspirators. Rather, the cross-examiner introduces a reasonable doubt if such doubt is possible.

Caveats Relevant To The Role Of The Attorney And The Role Of The Teacher

In general. Cross-examination should not be viewed as solely the lawyer's attempt to build a case. To do so would be to miss the rich intellectual warehouse available for the teacher to use in the classroom. The techniques developed over the centuries to permit effective cross-examination are useful in teaching. The task of the attorney and the task of the teacher are not necessarily the same even though both are teachers. Still, the techniques of cross-examination developed in the courtroom can be useful in the classroom.

What Cross-examination is Not. CROSS-EXAMINATION AND THE SOCRATIC METHOD ARE NOT THE SAME. Cross-examination is a technique for asking questions. Cross-examination is not necessarily the best method of finding the truth, whatever the truth is. The lawyer, after all, has a case to win. The focus is upon winning that case. The teacher's job is to find the truth. Winning the case and finding the truth are not necessarily the same.

Cross-examination Can Become the Very Opposite of Deconstruction. The lawyer, in focusing cross-examination upon the ultimate goal of winning the case is, in a sense, defeating the purpose of deconstruction. In a sense, the lawyer is establishing beforehand a set of assumptions or presumptions about the reality the lawyer is attempting to discover.

The Socratic Method is not used to find answers the teacher has already determined to be correct. The Socratic Method is as much a learning process for the teacher as for the student. Together, they find the truth. The questions provide a framework for intellectual inquiry. That is their sole function. It may be that the questions lead to an answer the teacher had not considered as acceptable. The lawyer would never want his or her questions to lead to an answer the lawyer had not considered as acceptable.

The Attorney is Not Interested in Absolute Truth. The attorney is interested in inconsistencies, in reasonable doubt, in the preponderance of the evidence. The teacher is interested in truth. The attorney in a criminal case is not interested in who committed the crime. The attorney is attempting to prove facts which create a reasonable doubt in the mind of the juror that the defendant committed the crime. In a civil case, the attorney is not attempting to establish that the client is negligent. Rather, the attorney is attempting to prove facts which make it impossible for the juror to conclude that the client by a preponderance of the evidence was negligent.

The issue is not the amount of evidence but rather the weighing of evidence. The juror weighs the evidence to make a factual determination. This process cannot, obviously, be employed in teaching French spelling or chemical elements. Either the spelling is correct or it is not. These are building-block facts without which French class and chemistry class cannot proceed. The process, however, is useful in teaching subjects which do not require memorization of specific essential facts as in the following questions: Who assassinated President Kennedy? What are the causes of the First World War? What is a just society? These are broad questions in which the weighing of evidence, the very life-blood of a trial attorney's work, is necessary.

Truth is relative and not absolute. An attorney is not looking for the precise reality that existed at the time of the accident or at the time of the crime. The attorney is looking for the closest approximation of that reality. The attorney knows that the search for absolute truth usually leads to a dead end. Memories fade. Physical evidence disappears or is destroyed. The search is not for some yes or no answer. This does not mean the lawyer is not interested in knowing the truth but it does mean that the lawyer is far less sanguine about what can be discovered. As a result, very often this is not one truth but many truths, not one reality, but many realities, not one explanation but many explanations.

The lawyer has two cases. The case the client presents. The case the opposing party presents. Which case does the attorney believe? What methodological tools can the attorney use to assess the validity of each case? Ultimately, the attorney is forced to be skeptical and more than skeptical.

The lawyer as a deconstructionist is prepared only to grant the possibility that something may be true. But finding what is true is more often than not a matter of eliminating interpretations and theories. Such a methodological approach means a constant re-evaluation of the reality posed for the attorney.

Difference Between a Lawyer in Court and a Teacher in the Classroom. The lawyer unlike the teacher cannot just state facts. Facts must first be proven before they can be stated. The teacher may seem to have an advantage because facts can be stated from the very start of the teaching lesson. Yet a trial attorney would say that factual presentations not subject to challenge can often provide less understanding than the trial process in which facts must first be proven. A juror might be more appreciative of facts which the juror has watched being proved than facts which are simply presented to the juror as a given.

Questioning is Not Dialogue. The witness on the stand is not in a dialogue with the attorney. The attorney is directing the examination to a specific end and so there is no free exchange of ideas with the attorney and the witness as equals.

Judicial Notice. Not every fact need be proven. The judge may take judicial notice of commonly known facts such as Trenton is the capital of New Jersey. These facts may be the very facts which a teacher must teach in the classroom. These are facts the attorney does not have to prove. So in a sense the teacher and the attorney are not necessarily required to teach the same information.

The attorney need not teach commonly known facts; however, the teacher may have to teach them. Indeed, an attorney who attempts to prove the location of the Empire State Building would be ruled out of order by the judge because the judge would just as soon take judicial notice of the location as to waste valuable court time proving the obvious.

The attorney is more narrowly focused and yet is more broadly focused than the teacher may be in the classroom. The attorney can assume certain facts which the teacher may have to teach. The attorney can broaden the inquiry through the Socratic Method to discover facts which the teacher must for the sake of time simply accept. The lawyer, for example, might ask the expert witness to distinguish between a cloudy day and a sunny day because the weather is a factor on determining whether the defendant had sufficient visibility to see the plaintiff walking across the street. The teacher might simply say that a cloudy day is cloudy and a sunny day is sunny.

Socratic Method is Not Applicable in All Situations. The Socratic Method does not apply as readily to teaching particular facts as it does to broad concepts or ideas. A French teacher has to teach so many words and so much grammar that it would not be realistic to spend too much class time asking the student questions about a particular word. The concept of justice, in contrast, might be the subject of a whole semester of Socratic questioning.

Techniques Of Cross-Examination

The questioner must have an objective or focus. Questions cannot be random because the questioner would run the risk that wrong information may be given and the wrong conclusion or objective reached. The following techniques must be employed:

A. Questions cannot be asked in random order. An attorney who cross-examines a witness with random questions runs serious risks:

   1. The witness will state the wrong conclusion.

   2. The witness will ramble and waste valuable time.

   3. The witness may make surprise statements which hurt the attorney's case.

   4. The jury or the judge may not be able to follow the witness's train of thought or the attorney's train of thought.

B. Questions must be planned. The examiner must know the objective to which the questions must lead. The objective is some goal which the examiner wishes to reach.

C. Begin with general questions. General questions serve several functions. The questions help disarm the student by putting the student at ease and make the student feel comfortable with the questioning process. The

> questions may lay a foundation for more detailed questions which could not be logically asked without this foundation. The questions give the teacher a sense about the student and the student's comprehension of the subject matter and willingness to explore new avenues of thought.

The teacher, for example, may want to teach that the United States has many foreign policies rather than a single foreign policy. The teacher can use questions to get the students to conclude on their own that the United States has many foreign policies. The teacher begins with general questions, proceeds with more specific questions, and ends with specific questions. Again, the teacher wants the student to conclude that the United States has many foreign policies. The line of questioning begins with the student acknowledging the differences among his friends and concludes with the statement that she treats them differently as a result. The student comes to understand the complexity of foreign policy and the difficulty of having only one.

Contrast this approach with stating that foreign policy is many foreign policies. What is lost? The student does not work through the problem but rather accepts as given the statement that the United States has many foreign policies. The student does not see that the United States, in a sense, has the same need for friends which a student has. The student relates foreign policy to her own life. The student can feel pleased that she has solved a problem. The student may even feel surprised at having reached a conclusion that she might not have made but for the questioning and answering.

It is important for the teacher as well as the lawyer to develop a sequence of questions. The purpose of developing an order or sequence to questions is to develop a line of thought based upon a line of reasoning. The student like the witness is led to certain conclusions the examiner wants to reach. The reason for order or sequence is to limit as much as possible irrelevant or unreasonable statements by the student or the witness. In short, the questions must avoid the answers which become tangents or inappropriate to the purpose of the questioning. In a courtroom there are particular rules of evidence to prevent the introduction of hearsay evidence unless the evidence falls within one or more exceptions to the Hearsay Rule. The judge has legal power to deny the admission of evidence which does not fall within one of those exceptions.

The teacher is at somewhat of a disadvantage in asking questions because there are no real rules of evidence and because in a classroom ideas and thoughts are freely encouraged in a non-adversarial setting. Still, there are in questioning certain important rules which, while not cutting off intellectual inquiry, do focus the student's attention and thoughts in a direction more likely to achieve the teacher's desired goal.

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CONCLUSION

Cross-examination is an essential procedure for determining the truth or, at least, for avoiding falsehood. Without it attorneys and juries would have to rely solely upon the sworn statements of witnesses. Issues of perjury aside, witnesses may very honestly believe that they are stating the absolute truth. Yet without cross-examination there is no way to determine the truthfulness of what the witness has stated.

The lawyer learns the art, and it is an art, of cross-examination from training the lawyer receives in law school in the Socratic Method. The law school curriculum provides students with the techniques and methods to ask questions rather to give answers. Lawyers are painfully aware of the terrible consequences of not asking questions. Innocent people have been convicted and even executed because either the right questions were not asked or the right questions were asked wrongly or no questions were asked at all. Cross-examination is not a mere intellectual exercise. It is the very heart of the truth-finding process. And so its application to the classroom becomes apparent.

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Is There A Fit Between Critical Thinking Theory And Cognitive Theory?

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Psychology may be the only thing there is not a philosophy of; the two disciplines are rivals in the same sphere, and "philosophizing" and "psychologizing" all too often become mutually derogatory epithets. Philosophy is not so much concerned with learning, understood as the comprehension and mastery of information, as it is with the justification of belief systems. "Reasoning" tends to be understood as "inference" by psychologists but as "argument" by philosophers. If we are to avoid having a "critical thinking" movement, dominated by philosophers, competing with a "thinking" movement, dominated by psychologists, common ground between the two disciplines needs to be found.

The Critical Thinking Movement And Cognitive Psychologists

I advocate a broad-sense definition of critical thinking: "Almost any kind of thinking except factual recall, repetition of beliefs, and implementation of algorithmic procedures." Most well known theoreticians and activists within the Critical Thinking Movement, on the other hand, advocate definitions much narrower in scope, which focus on Socratic inquiry, the evaluation of arguments, study of informal fallacies, the raising to a conscious level of biases they believe to be built into natural language, and a concern not only with thinking skills but perhaps even more with what they call "dispositions"—attitudes that either inhibit or motivate open-minded and thoughtful investigation of issues. Variations within this broad consensus may be found in a number of sources (e. g., Beyer 1984, D'Angelo 1971, Ennis 1962, 1985, Lipman 1988, Paul 1990, Siegel 1980). Some psychologists, especially those associated with Project Zero, emphasize dispositions; with that exception, the narrow focus is clearly that of philosophers.

In a paper titled "Philosophy and cognitive psychology: Contrasting assumptions" (1990), Richard Paul claims that the educational establishment is dominated by a bias toward cognitive psychology, not that his own paper is free of bias. According to Paul, philosophers merely "emphasize" while cognitive psychologists "overemphasize," "underemphasize," and "ignore." Not one of the twenty-four contrasts listed is presented as an advantage in favor of the cognitive psychologists. More recently (1995), Paul still faults cognitive "theories of 'thinking' and 'intelligence'" for often lacking "a philosophical foundation, regularly ignor[ing] the problem of the intellectual assessment of thinking," and lacking "a clear connection to the comprehensive problem of teaching subject matter in a variety of fields." In the later statement, however, Paul does call for "integrating the empirical work of cognitive psychology into critical thinking theory."

The first of the twenty-four items Paul listed in the earlier paper was the contrast between the descriptive approach of psychologists and the normative approach of philosophers. I believe that giving the first priority to this contrast represents a correct insight, and I hope that we may be able to develop an approach that relates descriptive and normative features.

The Bridge: Psychology Of Logic

Such an approach already exists in the psychology of reasoning. It is descriptive in that it empirically investigates the ways the human mind actually works, but it is normative in that it assumes criteria for judging whether any particular operation of a mind is logical or illogical. The description is constructed by psychologists, but the criteria are provided by philosophers, that is logicians, and mental operations that do not meet the logical criteria are not judged as having a value equal to operations that do meet them.

The relevance of the psychology of reasoning to critical thinking is that students learn to describe and assess their own thinking. If, instead, educators describe and assess student thinking, students become either experimental subjects or objects of indoctrination instead of thinkers. If we not only require them to think logically rather than illogically but also urge them to prefer some kinds of logical thinking to other kinds of logical thinking, we are imposing an ideological agenda rather than applying a theory to teaching.

Some of the more prominent contributions to the psychology of reasoning have been made by Wason and Johnson-Laird (1972), Johnson-Laird and Steedman (1978), Guyote and Sternberg (1981), and Adams (1984), in investigating syllogistic reasoning; Johnson-Laird (1975), Osherson (1975), Rips (1983), and Braine, Reiser, and Rumain (1984), in assuming a base in propositional logic; and Kahneman and Tversky (1983), dealing with inductive reasoning. Sternberg, in numerous studies, has made comprehensive efforts to encompass all modes of reasoning into a unified theory of intelligence, as suggested by the phrase "triarchic mind."

Among the earliest topics investigated were the standard fallacies of formal logic, along with rules of inference that students in logic courses have always found counter-intuitive or difficult to apply. The most pervasive of all weaknesses discovered—reported or acknowledged by almost all investigators—is preoccupation with confirmation and neglect of disconfirmation. This applies not only to induction but also to Reductio (which is a method of "disproof" rather than "proof"). Such studies make more precise what logic teachers have always been able to observe in their students' mistakes (as well as their own!). What has remained mostly untouched is an empirical study of the role of informal logic in reasoning. The significant shift from a formal to an informal approach that has occurred in recent years in the study of logic has created a new challenge for psychologists.

In one way the most ambitious of all efforts in the psychology of reasoning, in that it seeks a complete isomorphism between a psychological system and a system of logic, is Braine's model of a natural logic, providing a precisely defined inventory of inference schemata claimed to represent the repertoire of propositional schemata naturally employed by human reasoners. With some significant variations, the list closely approximates the rules of inference typically found in Introduction to Logic textbooks. However, while most of the schemata were posited as universal, some were not. The model has been exhaustively tested, and it was reported that subjects performed "effortlessly" at drawing inferences, with success rates for some inference schemata exceeding ninety per cent (Lea, et. al. 1990).

The notion of a universal natural logic no doubt owes much to Chomsky's concept of a linguistic competence, a knowledge of a finite set of rules of language native speakers have that enables them to produce an infinite number of novel sentences (Brown 1988). Braine's reasoning competence is different from Chomsky's language competence in at least one important way, however. Whereas speakers appear to have command of their native language as a whole, and the learning of deviant rules and failure to learn rules seem limited to relatively superficial aspects of language, certain fundamental elements of reasoning appear to be inadequately learned by most reasoners. In Lea's testing, Reductio had to be divided into a limited form and a stronger form, and even the limited form could not be confirmed as universal.

Critical Thinking Is Not Logic

In spite of the impressive results reported by Lea, we cannot conclude that there is no need to teach reasoning because we are all naturally born logicians. Insofar as reasoning is argument rather than inference, the role of thinking dispositions emphasized by critical thinking advocates becomes crucial. Being able to reason logically about neutral topics such as thermodynamics does not guarantee being able to reason logically about value laden and emotionally charged topics such as abortion.

There is a difference between a fallacy and a gap in natural logic competence. Personal attacks on opponents or appeals to the self interest and emotions of the audience may violate rules of inference, different rules on different occasions, but are motivated by factors outside logic altogether. Such fallacies are unlikely to occur in the drawing of inferences about technical or ideologically neutral topics but very likely to influence arguments about politics or other charged issues.

The "dispositions" that partially motivate many fallacies differ not only from logical gaps but also from "thinking styles." Thinking styles vary across individual thinkers and are regarded descriptively, neither good nor bad, but just different. Dispositions, on the other hand, tend to be universals and are often regarded normatively, good or bad, even by psychologists, let alone philosophers.

Informal Logic

Recent developments in informal logic concern much more than just fallacy theory and could have an important bearing on the psychology of reasoning, which hitherto has dealt with formal logic. Research into the relation between induction and deduction, into premise relevance and topic relevance, and into the theory of analogy are cases in point.

Throughout the modern history of their discipline, psychologists have attached much importance to analogy as an indicator of intelligence. One can surmise this from the frequency with which analogies appear as test items in IQ tests. Philosophers likewise have been much interested in analogy ever since Aristotle, and it is an important topic in informal (not formal) logic. For historical reasons (Brown 1989), logicians have been concerned mostly with inductive analogy, and psychologists with proportional analogy (A:B::C:D), an altogether different type. Proportional analogy is not necessarily even inferential, let alone inductive, but the two types are commonly lumped together (along with metaphor) as instances of inductive reasoning, leaving the theoretical status of analogy in relation to intelligence in a muddle. Just to make the situation even more confusing, psychologists, and others, sometimes distinguish analogies on a different dimension, close versus remote (Perkins 1983), an opposition referred to in rhetoric and speech communication as "literal" versus "figurative."

Logicians themselves are not necessarily especially interested in analogy itself but rather in analogical arguments, again a different topic.

It is far from clear what kind of intelligence is being measured by the analogy questions on IQ tests. I am not aware of any studies of the nature of analogical reasoning published by IQ theorists, though they may exist. Sternberg does provide a componential model for "solving" the A:B::C:D analogy, which he presents as an instance of inductive reasoning (1985, pp. 134-5). It is surprising that there is no explanation of why this analogy type is considered inductive, especially in view of Sternberg's suggestion that inductive reasoning, unlike deductive reasoning, comprises a unitary factor of mental ability (1985, p. 333).

Perhaps this is not so surprising after all since it is only recently that modern logicians have paid serious attention to noninductive analogy. It was the dominant focus of a recent landmark special issue of Informal Logic (Fall 1989, Vol. XI, No. 3), in which all six articles recognized it. Only one of the articles maintained that analogical arguments are deductive, and it will no doubt come as a surprise in various disciplines that some logicians are beginning to acknowledge reasoning that is neither inductive nor deductive.

Prospects And Conclusion

I suggest that this is no time to allow rivalry abetted by mutual inattention and unawareness to stifle a promising interdisciplinary field of inquiry at just the moment when each discipline separately is breaking new ground.

For more than a decade, cognitive psychologists have been pursuing comparisons between novice and expert modes of thought within any given discipline, but it is only within the last year that I have noted any mention of this activity in critical thinking circles. It has been brought to the attention of the present conference (Fultz 1994), and the Institute For Critical Thinking at Montclair State has reprinted a paper on it that was delivered at the 1994 Sonoma conference (Alma 1994). As Fultz's use of metaphor and Alma's use of analogy suggest, informal logic topics are likely to be relevant to such inquiry.

In a recent issue of Informal Logic, an article proposes to "classify arguments as deductive or non-deductive by appealing directly to the psychological states of those persons who are the authors of such arguments" (Vorobej 1992). The acceptance by a logician of any psychologically based criterion for definition of deduction (even under an odd interpretation of "psychologically") would have been not only unpublishable but unthinkable just a few years ago, and psychologists would do well to take note of this shift.

I have examined a tendency to accept analogies based on real but irrelevant similarities between objects or ideas that are conventionally or naturally grouped in the same category and to distrust analogies based on relevant and insightful comparisons between objects or ideas that are conventionally or per se unrelated to each other (forthcoming in Informal Logic), but though the presence of this bias in logic textbooks is easily confirmable, it remains to be demonstrated by psychologists whether the bias is widespread in the predispositions of ordinary reasoners.

In answer to the initial question, is there a fit between cognitive theory and critical thinking theory: no, not as long as cognitive theory considers only formal logic in exclusion of informal logic, and critical thinking theory is wedded to argument in preference to inference. But the answer is yes, if both disciplines are able to extend their boundaries to include reasoning in its broadest scope.

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Assessing Assessment

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Testing practices on many campuses have not kept pace with the new knowledge about tests and testing. On such campuses, once a test has been created and put into place, it is often difficult to dislodge even when inadequacies in the test become visible. Creativity in thinking about assessment and in inventing assessment instruments, along with energy and determination on the part of faculty responsible for testing, are needed for the elimination of antiquated tests and the development of new tests. Since tests are hardly the work of single individuals, collaboration among several people is essential, especially for the development of new tests that will enjoy wide support for their adoption.

We will share three different stories, all of which report events at senior colleges of The City University of New York (CUNY). One is about the development of the Baruch Math Placement Exam (BMPE). The second is about the development of a new Reading Test at Baruch College. The third is about the former Lehman College Writing Examination.

At CUNY, there are 11 senior colleges, 7 community colleges, a Graduate School, a Law School, and an affiliated medical school. In 1976 the Board of Trustees mandated that all undergraduate students pass three Basic Skills Assessment Tests in order to attain junior standing in a senior college. These assessment tests were to be in reading, writing, and mathematics. Instead of serving mainly as assessment tests for assessment, these tests are now also being heavily used as placement exams at most of the CUNY senior and community colleges.

After the adoption of the Open Admissions policy, in the early 1970's, and prior to the Board of Trustees' mandate about testing in 1976, Baruch College's Math Department designed and administered its own placement test and scored it. Members spent countless hours working with this examination. After the 1976 mandate, Baruch's Math Department administered the CUNY Math Assessment Test (CMAT) along with the departmental test. Dr. Collison, the member of the Math Department who was in charge of administering the placement exam, conducted several correlational studies. His findings indicated that the scores on the CMAT were highly correlated to the results on the Department's own test and the Department's own test was abandoned.

However, there was general agreement that the CMAT was not a good placement examination. Although it seemed to do a satisfactory job in identifying students who should be enrolled in remedial mathematics, it did not provide adequate information for discriminating among students who might enter various levels of credit-bearing math courses, such as pre-calculus, discrete mathematics, and calculus. This weakness was significant because, at Baruch College, there is a special program called Baruch Scholars. These students enter with a higher GPA than most entering students. They are considered the creme de la creme of the College, and many were placed in the first-semester calculus course. But those who were placed in the course sometimes failed it, and lost their scholarships as a result. It became apparent to the Baruch administration that the CMAT alone was not adequate. The administration provided additional support to the Math Department to create a new test, to be given along with the CMAT.

In the Fall of 1994, both the CMAT and the newly-designed test were administered to all entering freshmen. Several semesters had been spent designing, piloting, and evaluating the additional test. It was administered through the College's Office of Assessment, machine scored, and, through the computer system, placed on file. It is too early to evaluate whether it has been successful or not. However, the administering of the exam showed no wrinkles; it was smooth sailing.

Other CUNY schools also use their own placement examinations in addition to or instead of the CMAT. These include City College, Brooklyn College, Queensborough Community College, The College of Staten Island, Bronx Community College, Queens College, Hunter College, LaGuardia Community College, and New York City Technical College.

As one outside the Math Department, Entes was greatly impressed by the willingness of the members of the Math Department who were interviewed by phone to discuss the placement exam. It is obvious that they had spent much time in developing, piloting, and consulting with others about the exam. When she was inquiring, individuals called from their homes to her home to continue the conversation. The Chair of the Department returned her phone call immediately and followed up with another call when she had not returned his call that day. She was in awe. Their professionalism, dedication, and engagement permeated their responses to her questions about the test. They also expressed an interest in what she was writing and volunteered to read this manuscript.

Their behavior was strikingly different from that of members of a committee who were developing an alternative Reading Assessment tool in Entes' own department, Academic Skills, at Baruch College. Supposedly this group had worked several years on the exam, choosing reading selections and designing test questions. They also had "piloted" it and administered it to students. In the fall of 1994 she received an announcement from the Director instructing her to administer the test to all of her students in all of her classes in the first week of class meetings.

However, the Committee never presented their findings, nor did the Committee explain what the new instrument was supposed to be testing. Part of the curriculum in Baruch's Reading course calls for students to write a research paper, and there were no questions testing students' abilities in this area. The Committee did not argue that the test was valid and reliable. Yet for several semesters, incoming students were given this new test. Before it was even formally accepted by the faculty of the Department, a notation was placed in the Minutes of a department meeting that students' scores on this test could be used as the criterion for exempting students from the first Reading course and placing them into the next course. Generally, the test was "piloted" in ESL classes—English as a Second Language, ASD 0081, 0083, 0085. Entes does not teach those three courses, but rather ASD 0017, which is designated "non-ESL" (though in truth the students would be called, and refer to themselves with the label, "ESL"). Entes had asked for a copy of the test, but the test seemed deliberately to be kept under wraps—as if it needed top security and was a closely-held secret.

At a Reading Teachers' meeting on May 26, 1994, Entes requested once again a copy of the Reading test that the committee was working on. She was told that during the summer the test would be sent to the Reading staff. There was no mailing during the summer, but when classes began faculty were to pick up copies of the exam. Entes wanted to read the exam before she administered it to her students, but she could not; it was not legible. She asked for a better copy of the exam, but the Director never supplied it. Entes explained to the Director that since the teacher could not read the test, she felt that giving the test to her students would be unfair, and consequently she did not administer the exam to her students. At the September 22, 1994 Reading Teachers' meeting many of the adjunct faculty who did administer the test complained about the questions and also about the poor reproduction.

This effort at inventing a new placement test for Reading can only be described, using for the moment a charitable term, as crude. Entes is happy to report that in the next semester, Spring, 1995, the test was officially not administered to incoming students. And surprisingly the experience of several hundred students who had spent several hours taking the test and the experiences of faculty who had spent several hours grading the test were never discussed with the faculty after the September, 1994, meeting.

At Lehman College, the revealing case study is that of the old College Writing Examination (CWE). At Lehman in the 1970's, the faculty in English developed what was then called an English Proficiency Examination, to be administered to all students finishing second-semester composition. Students had to pass it to complete the course. In the early 80's, before Larson joined the Department of English, the examination had been renamed the College Writing Examination (CWE) and had been adopted as an official all-College requirement: students had to pass it in order to obtain credit for second-semester composition and to obtain their degrees. Students who failed it could not get credit for the course (which was required for the degree), whatever the quality of their work during the course, and were thus prevented from graduating until they had passed it.

The test, which required slightly over two hours of the student's time, offered a passage of moderate length (running about 2/3 of a legal sized sheet, single-spaced) followed by two questions. The student was to read the passage and respond to one of the two questions in an essay. The subjects put before students often dealt with serious problems in our society or in schools. It was assumed that students knew enough about the subject matter to be able to call their knowledge to mind easily under pressure. Students had no material to prepare in advance, and had no advance indication of the subject matter of the reading passage, thus no advance opportunity to familiarize themselves with information about the subject or to do some thinking about it—this despite pretty general recognition that in order to write well any person, student or other, needs to have developed some ideas and, preferably, located some data to use in supporting those ideas. The examination in effect asked students to do uninformed, impressionistic writing—as indeed the well-publicized CUNY Writing Assessment Test (the WAT), a 50-minute test which has been in place virtually without change since 1978, still does.

It is Larson's understanding that when the CWE was initiated, no effort was made to determine rigorously its appropriateness to the making of judgments about a student's proficiency in writing. That is to say, this test, which for obvious reasons caused a great deal of tension among students, delayed the graduations of many students, and effectively controlled much of the instruction in second-semester composition, had never been shown, through appropriate research, to be valid as a "high stakes" test of writing (i. e., a test whose results carried major consequences for the student). It appeared that no one had considered whether the test told the faculty what the faculty wanted to know about its students. Neither the Department nor the College Administration, it appeared, had thought there would be value in investigating the validity of the test.

Furthermore, there were no clearly articulated scoring criteria; there was no statement of what was required of a student in order to pass the test. There was no effort to reach agreement among readers about the scoring standards to apply, and there was no training for these readers in the scoring of the tests. It was assumed that readers—full-time faculty in the Department of English—would easily recognize a passing paper, and by implication a failing paper, when they saw one. Various versions of the test (it was given some seven times a year, each time in different versions for day and evening students) differed appreciably from one another in the difficulty and complexity of the reading passage. The questions, too, differed in the demands that answering them placed upon students. Questions that students were to write about in their essays were often damagingly ambiguous; no one had the responsibility for evaluating the test questions for clarity. Passages were often selected and questions created—by the Director and Assistant Director of Composition—two or three days before the test was to be given. No effort was exerted, as scholars in testing usually insist is necessary, to make the passages and questions comparable from test session to test session, so as to assure that the student who passed, say, in 1994 was giving a performance at least as good as that of a passing student in 1991. A nightmarish travesty of the testing of writing!

Students complained bitterly about having to take the exam. They and many faculty supporters asserted that the exam discriminated against ESL students, especially in asking them to write about activities and issues that were not part of their cultural experience. Some faculty in other departments supported the students' arguments.

As Larson learned more about the testing of writing, he became more and more convinced that the test was indefensible, and he began what turned out to be a four-year effort to have the test discontinued. He reported his views to the President of the College; the President's response was to appoint study committees. When the first such committee presented a complex recommendation that the test be discontinued, with certain conditions, he appointed a second committee, on the status of writing at Lehman College. Having received from the second committee still further advice that the test be discontinued and that the College should take measures to infuse writing into academic disciplines, he asked the Committee on College Requirements (which recommends to the College Senate the requirements, other than major and minor requirements, that students must meet as part of their overall degree program) to discuss the matter. That group spent a year on the issue; some members argued urgently that a one-shot, two-hour test was essential if the College was to maintain its stature among those who hired its graduates. Finally, after two long debates in two different meetings, the College Senate made its decision to discontinue the examination.

From these protracted arguments, one can draw a few inferences here about attitudes toward the testing of writing, at least at one publicly-supported college. The same attitudes may prevail in other places, and where they prevail they need to be confronted.

First, many faculty were convinced that a test of writing, almost any test, was a good thing. It showed students, faculty outside English, the community at large (e. g., employers), and secondary school teachers that the College had "standards" for written expression, and was enforcing them, though those standards were never articulated. Many faculty believed that Lehman had to display a concern for students' writing and reading at a time when there was much discussion in the media and in the society at large about students' lack of "literacy."

Second, many faculty believed that giving a test was as valuable a way of dealing with students' writing as strengthening instruction would be: show the students in an exam that they could not write, and they would take hold of themselves and by strenuous effort of will become satisfactory writers. This perception may be what David Russell referred to, following Mike Rose, as the "myth of transience" [Rose 355]: difficulties, if any, in students' writing will just go away if attention is given to them [Russell 7]).

And third, the Department of English, which administered the test and required its full-time faculty to score it, took great pride in being—I adapt roughly the words of Mina Shaughnessy—the "GUARD[IANS] [of] THE TOWER" of good literacy (Shaughnessy 297-298). To suggest that the test was invalid, to challenge its procedures and effects, was to fail to recognize one's colleagues' unselfish and valuable efforts at defending civilized discourse. And to imply that test results might point to a need for reconsidering the curriculum and/or the strategies and emphases of teachers was to invade academic freedom.

Fourth, in promoting literacy, it seems, the value of using time-limited tests is for some faculty a matter of principle—an article of faith. That position, of course, has a good deal of professional support. (See White, 1994.) But many of these faculty believe that to be concerned with such matters as validity and reliability (central concerns of people who make their living measuring students' abilities), to be, that is, thoughtfully attentive to whether a test and testing practices tell users what they want to find out about students' attainment of the abilities that the writing course had sought to help them develop, is to betray humanistic values, to keep company with number-crunching social scientists, members of an alien community.

Yes, Lehman's Senate did vote to eliminate the College Writing Examination. In that outcome lies a hard-won lesson. An institution that wants to employ large-scale tests of writing has got to address the issues of whether the testing procedure is suitable to its students and to what the institution wishes to learn about its students' progress. A test needs to be valid (according to current understanding of the term "valid," which scholars now argue must include concern for the effects of a test for students [Moss 109]), as well as whether the test is reliable.

If we do not deliberate with great care about the tests to which we subject our students, we risk disadvantaging not only students but also those who want to use the results of the tests for instruction and placement. Users of test results have got to be able to have confidence that the results are telling them what they want to know. To test well is a creative act, and the process of creation is not to be undertaken hastily, haphazardly, and thoughtlessly.

From these case studies, those who wish to engage in large-scale assessment of students' abilities at mathematics, reading, and writing will draw, we hope, two important guidelines.

First, those who create a test need to collaborate with colleagues who will use the test and act upon the results to assure that the proposed test will supply as nearly as possible the information that the faculty want. This principle means that there should be ample discussion of what that information is, and how best to assure that students' performance on the test will provide that information. Naturally, the test should be tried out (piloted) to determine what information it provides and how good that information is, and the results of the pilot study should be analyzed and discussed.

Second, tests once put into place need to be continuously reevaluated, to assure that they keep pace with what is being taught, with what the faculty want to see in their students' performance, with the characteristics of their students, and with the new knowledge being developed about how to make tests dependably informative.

Students' academic studies, even their lives, are to a large extent mapped out by what they do on tests. The map ought to take students where they need to go and want to go. It should not delay their travels unduly or lead them in a direction they don't need to go.

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Wrestling With Angels

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Recently I have been thinking about the titles of many academic articles, those colonically divided between artsy come-on (usually a quotation from the text about to be interpreted) and the often sodden, disappointing rationalization that follows it: "Conquering Laurels and Creeping Ivy: Tangled Politics in Herbert's Reditum Caroli"; "A Breach in a City the Morning After the Battle: Lost or Found?"; "'Too Pathetic, Too Pitiable': Emerson's Lessons in Love's Philosophy; " 'The Threatening Angel and the Speaking Ass': The Masculine Mismeasure of Madness in Anne Finch's 'The Spleen.'" I see in such titles literal maps of a pretext of originality wrenched out of a homogenizing agenda of academic literacy. A spectre of creativity haunts them, ghosting the hope for a displaced, undernourished invention to survive. This essay is a meditation on the forces that contend against creativity and the trickery required to outlast them in Academe.

Without actually advocating illiteracy, I argue that the production of academic writing—from basic freshman composition to faculty publication—now marks class in a new and seductive way, complicating writing instruction and disabling innovation. Possibly this renewed emphasis on literacy as an economic and class boundary responds (negatively) to the democratization of the population of higher education since the end of World War II. Certainly the expansion of higher education has been accompanied by an increasing and compensatory hierarchizing of structure now inseparable from the academic economy. During the last two decades, when American universities have been shaped by a shrinking market for humanities and arts professors—(we are perhaps the only profession with an employment manual written by the Hemlock Society)—, a burgeoning and increasingly profitable market for administrators has grown up. Correspondingly, faculty ranks have laddered upward past Full Professor to "Distinguished." In the SUNY system, three kinds of distinction are officially recognized, in Teaching, Research or Service; and even the smallest liberal arts college now has its named and endowed chair. The old expectations matching new Ph.D.'s to "proper" institutions no longer work predictably, when they work at all. Faculty salaries, we learn, are at an all-time high.

Faculty ranks have also widened below, however, where part-timers, adjuncts and graduate assistants, many statistically with little or no hope of full academic employment, comprise a new academic "underclass." As Gappa and Lewis point out in their recent study, The Invisible Faculty, adjuncts are not a monolithic group, and many of them teach in areas of specialized expertise. Many more, however, are seen as interchangeable, and are largely responsible for composition instruction in English departments and writing "centers," proficiency examinations, and tutorial support. (In my department last year, people other than tenure-track full-time faculty taught approximately two thirds of all FTE's, that is, students counted by credit hours. Most of these students are lower-division freshmen and sophomores in writing or "writing emphasis" courses.) Thus, while more and more "distinctions" single out individual faculty, the range of salaries among colleagues with similar credentials but different ranks and institutional recognition varies from poverty line to affluence, with the result that teaching has become a *financial variable*. While hierarchization is itself anticreative, so too is the reliance on specific kinds of literacy such as academic publication in determining and justifying faculty status and remuneration.

One result of the re-hierachizing of the university is that a "new" student—read "non-traditional," female, older, "minority," ESL, and so on—is being contained or processed through basic literacy courses taught by underpaid and sometimes underskilled "marginal" faculty. Literacy is, if anything, overemphasized in Academe today precisely because its use as a class boundary seems to order the otherwise seeming chaos of new kinds of students *and* professionals in the "democratized" university. Literacy still promises a "quick fix" for America's racial, ethnic and religious tensions. The persistent enthusiasm for a "common core curriculum" also often masks nostalgia for an easier, i.e. *less humanly diverse* past. If the student body's diversity is increasing, then perhaps it can be balanced, diluted even, by a syllabus or even a sequence of "General Education" courses intended to homogenize difference. And who teaches these courses? A "senior lecturer" stands and pronounces knowledge, remote from the "dirty hands" of writing instruction, the essays and revisions, the agonizing and wrangling over grades, tasks commonly left, again hierarchically, to the young, the aspiring, the recent, and the underpaid, an increasingly female group. There has been a feminization of writing (under-remunerated, domestic work...the child-rearing of the academic disciplines) at one end of the academic spectrum, and, at the other, a masculinization of writing (over-remunerated, public work...bringing home the book as bacon).

At the other end of the academic caste system, publication—the production of academic writing—now seems requisite for tenure track employment and is used conveniently to "explain" at least some of the discrepancies in tenured professorial salaries and workload. At a personnel meeting in my department last year, for instance, two colleagues, one a Distinguished and another a Full professor, both announced gratuitously that they earned 50% of their very generous salaries because of their publications. Since no such breakdown occurs in any stated policy, we must suppose, perhaps to their credit, that how or whether they earned their salaries at all had been on their minds. A few weeks later, our Chair, asked by a graduate student what is "required for tenure," unhesitatingly answered, "A book-and-a-half." Page-counts—often without regard to the quality of the work— determine who will remain employed; book fetishism has overtaken all over forms of intellectual expression; and self-presentation, the first law of Academe, is, like the salaries, at an all-time high. The stratification of faculty without regard to teaching—or, actually, *in spite of* it—tends to displace the pressure to publish from those above to those below, from teachers to students, and *vice versa*, with damage to the creative potential of both. I cannot be the first to comment that one may both publish and perish creatively.

In the university, the production of "scholarly" or pseudo-scholarly writing defines an authority boundary between student and teacher, but also between teacher and teacher. For teachers, publication often insures job security and professional recognition: I publish, therefore I am, to paraphrase Descartes. For students, writing is implicitly or explicitly presented as the promissory password to "a better life," as in graduation from high school, college, grad school, med school, despite the fact that literacy is widely recognized as the *consequence* of class, and not, in general, its cause. The limitations of literacy—the CEO's faulty correspondence dictated to and proofread by an underpaid secretary; "college writing" as a localized phenomenon found nowhere else in life or, sometimes, even in college; or the President's ghost-written speeches: all these remain dirty little secrets in the promotion of literacy. The personal costs of becoming academically literate—writing what one is assigned, advised or permitted, not what one needs or wants to say; writing "for" a teacher or a promotion, etc.— likewise are dismissed or ignored. Instead, we find literacy enshrined as a catalyst for heterosexual romance in the recent movie "Stanley and Iris" or sponsored on television by a breath mint company's ad for Literacy Volunteers.

Like most caste systems, Academe's is best exposed from the bottom up. Through the gatekeeping use of academic literacy, a feudal system has evolved around literacy itself. In my university, teachers of writing number greatly among the exploited adjuncts who work from semester to semester without financial security, and serve at the pleasure of one or two individuals (the undergraduate director, the Chair). Clusters of writing instructors, usually the "apprentices," mostly adjuncts and/or graduate students, enact the philosophy of a "Director." Their performances are not monitored as carefully as those of "regular" faculty, although, like Avis, they often "try harder." They work in isolation, excluded from department meetings. And while they supply the perceived institutional need to socialize vast numbers of "diverse" incoming students with "basic skills," they, themselves disempowered, are asked to empower underrepresented or inadequately prepared students. Actually, they empower "regular" professors to pursue what many call "their own" work, as opposed to teaching. Enhancing skills and encouraging beginning writers is left to those whose own spirits and incomes need a lift. Perhaps the final irony is that, in order to piece together a living wage, many of these instructors teach part-time in two or three programs concurrently, and, seeing everywhere that only publication leads to advancement, themselves haven't the time to write. As Marx comments in his "Manifesto," " the proletariat [the working class] is recruited from all classes of the population" (Stuckey, 42). Professors are proletarians in disguise. Adjuncts call us on the costume.

In fact, my colleagues who claimed they earned half their high salaries through publication are not luckier creatively. If we adopt their point of view, that publication justifies salary, then any open declaration of their own writing problems constitutes self-unemployment, an acknowledgment that they are not doing their job. And repression distorts things. Individuals hiding their own guilty imperfections are more likely secretly to pass on their writing pathologies and anxieties to their students. Behind the grammarian's meanness or, at the other extreme, the evangelist's impassioned aim to change the students' worldview, lies the social insecurity imposed where there is a class system that is intrinsically, shamelessly unjust—and never fully exposed by its participants. No one in such a system escapes being a victim: systemic injustice is always egalitarian. Those who "succeed" in climbing literacy's ladder and serving as gatekeepers for others may be the most overinvested of all: they are often maintaining false selves carefully but fragilely constructed on that ladder's invisible rungs, as Richard Rodriguez documents in Hunger of Memory. What is more, "grade inflation" is not confined to student GPA's, but certainly extends to academic publications, routinely overestimated as "revolutionary," "groundbreaking," etc. Literacy anxiety may run highest among those who seem most likely to succeed in its academic forms.

The accepted forms for professional academic writing remain even narrower than those for student writing, and do so in pyramidal inverse ratio to academic rank. At the top, a kind of book-fetishism prevails. Books are not written, but "had." "Oh, X. is up for tenure? Does he have a book?" How candid, then, can faculty be about the pitfalls of literacy or the real problems of writing, such as moments of resistance and self-disgust? What about writing that is out of control, writing that terrifies the writer? What about the slow emptiness of fatigue? What about silences? Tagged by a Foucauldian surveillance of the "sabbatical" and "annual faculty reports," the "successful" professor resorts to familiar but anticreative dodges: the retreat into professional "perks;" the Sisyphan calculating and recalculating of belief in one's credentials; the search for "released time" as parole from a creatively unfulfilling and morally questionable teaching life. Even the "book" as phallic triumph—monolithic, hard, lengthy, continuous with itself and seemingly immortal—may be supplanted by a younger one, or remaindered. The work is anything but "one's own."

In the classroom, the same literacy-anxious teacher may overplay authority, industrialize instruction (the contract of X amount of work for a C, B, A), or cynically give up evaluation ("Everyone gets an A in my course!"). More often, though, there will be a discrepancy between instruction and evaluation, symptomatic of the teacher's unstable sense of recognition and self. Students are not alone in the paranoiac "admissions error" syndrome. And escape is not easy. A colleague from a self-described "privileged" (read "white, rich") background, discovered, of his inner city students: "My conscience bothers me all the time. Here I am trying to get out of the same system I'm helping them to get into!" Running up against the undergraduate students' innocence, their untested belief that writing insures the "better life," or the graduate student's dawning perception that his or her study will probably not lead to a career, a teacher today must contend against the counterwave of his or her own bitter professional knowledge of a world of intellectual compromise.

Literacy has long been enshrined in America as necessary to personal advancement, public life, political participation, and even spiritual awareness. In schools, it is commonly held as necessary to complex thought. But social literacy also costs. In fact, as Walter Ong comments in Orality and Literacy, writing has traditionally been associated with death, perhaps because it displaces the body of the speaker, preempts voice and breath and stagnates them in prose. Returning the "person" to the text is a primary creative aim. Literacy's enshrinement also prevents our seeing that reading and writing are thoroughly learned, even strange behavior; Jonathan Goldberg notes, for instance, in Writing Matters, the degree to which anxiety about both reading and writing contributed to the creation of the literacy manuals of the Renaissance. J. Elspeth Stockey writes that "becoming literate signifies in large part the ability to conform or, at least, to appear conformist. The teaching of literacy, in turn, is a regulation of access" (19). Literacy, then, is an ideology, and, like every ideology put into action, it hides from itself. In Chaste Thinking, a study of the myth of Lucretia in the Renaissance, Stephanie Jed delineates the openly political agenda of the Florentine humanists, which focused on the editorial "purity" or "contamination" of an ideally "virgin" text. Jonathan Goldberg points out that Renaissance literacy promised upscale success and social mobility to a growing middle class, as it still does today. I would suggest, then, that the teaching of writing is always a conservatizing process, "the language of profit; in America, profit begs text," and that literacy is "the condition of postindustrialism" (Stuckey 19). That postindustrial values oppose creativity may be readily apparent; significantly, in Bonnie Friendman's Writing Past Dark, which might be called a therapy manual for the underachieving writer, the first chapter deals with the inhibiting effect of the most familiar of consumerism's dynamics: envy.

The academic situation I have been describing deadens our consciousness because it is ugly to contemplate and because all of us are implicated in its ugliness. We are implicitly bribed to produce certain kinds of uncreative writing—writing on the conference or journal theme, writing reflecting the current critical trend, writing obedient to the "correct" position, and so on. We pretend that our compromises and "right" answers are necessary, as if they were a matter of survival, when, most of the time, they are a matter of advancement on the ladder. Like Esau, we sell our birthright because we are hungry, for the moment's appetite. We do not, I think, want to admit that creativity can be disadvantageous and even dangerous in the "Ivory Tower." Instead, we proclaim that scholarly writing *is, ipso facto*, creative, or that new, non-canonic works redeem our old academic habits. We look at the web of hierarchy and defensively ignore or justify it. We read journals so that we will know what to write. We hoard ideas instead of sharing them: they are private property; they are income. We begin to read what others write with attentive, comparative fear of excellence. We displace tolerance with one-upmanship; contemplation, with productive speed. Doing these things, teachers compromise their own creativity and, with theirs, the nurture of their students' creativity is compromised too.

The current academic promotion of theory is also problematic. In "The Deconstruction of Emily Dickinson," Galway Kinnell's recent poem in The *American Poetry Review*, a narrator enters a classroom just as the lecture has concluded and the question period begins. He says he will recite a version of her "vow,"

> Publication - is the Auction
> Of the mind of Man -.

The professor, however, takes over to etymologically parse "auction": "'Yes,' he said," "the Auction"-"auction," from *augere, auctum*, to augment, to author...'" and, despite calls for " the poem...the poem" from women in the class, he preempts the creative artifact by deconstructing it.

> "In *auctum* the economy of the signifier is split, revealing an unconscious collusion in the bourgeois commodification of consciousness."

While our author says 'no,' the unreified text says 'yes, yes.'" He kissed his lips together and turned to me saying," Now may we hear the poem?"

What follows is Kinnell's funny and poignant catalogue of missed dialogic comebacks, all of which remain unspoken. In place of them, the visitor "recites like a schoolboy," voice "gradually weakened," the poem framed by the professor's controlling, concluding comment:

> "Thank you. So, what at first some of us may have taken as a
> simple outcry, we all now see is an ambivalent, self-subversive text."

The visitor, meanwhile, "moves into that sanctum within him where Emily sometimes speaks a verse," and even counterfeits one in her name; "but she was silent."

Kinnell's poem defines what happens, all too often, to literary art captured in the classroom's latinate displacements, its thefts of simple joy. The academic perspective ignores why we read and prescribes what we may write, driving us farther and farther afield from the consciousness of the creator. As "The Deconstruction of Emily Dickinson" tells us, it silences. Kinnell may be able to write his witty and sad poem out of the silencings of classroom experience, but many of us are not.

Yes, you will be saying by now, all that is true. But what can we do positively to enhance, to recover our creative lives? Certainly we cannot wait for the Apocalypse to change the university; and injustice, boredom, duress aren't going to go away. In our own lives and in our classrooms, we can make a start by recognizing what creativity involves. In contrast to the academic project, the creative one means embracing what is experimental in the knowledge that the embrace is risky. Unlike the academic project, charted beforehand, obviously "doable," the truly creative one may fail, and fail at the last minute, after weeks, months or even years of labor. The new way of teaching may not work out; the fresh idea, self-destruct; the short story, lose itself in the last paragraph; the novel, die in Chapter Two. Worse yet, creative work requires a passionate and personal investment of emotion, risky in itself. Such possible failures go beyond G.P.A.'s and certificates; and the creative endeavor also involves other risks, those of unpopularity, disbelief, and isolation. Even when creative work succeeds, sustaining it means facing the "zero" from which such work, unlike the bulwarked "academic" writing, must repeatedly begin again. The teacher who would encourage creativity, then, must be prepared to support and free the student risking it in time-consuming ways that go beyond the usual conference style or in "letting go" and trusting the student's capacity to work alone. The teacher's own example of risks and joy is essential. The teacher also must become tolerant of what we might call the valuable imperfection of creative work, not penalizing the student who undertakes it but turns out, say, a less structured essay or a less "finished" concept. Separating the creative endeavor from the competitive structure of grading is especially helpful—-giving a course only Pass/Fail, for instance. Even simpler techniques, such as beginning every class with a short poem about creativity (poems by Lorca, Holderlin, Rilke, Unamuno and others come to mind), or handouts for personal enrichment rather than group discussion, exposure to a variety of art forms, etc., highlight the creative process and "naturalize" it into the climate of the classroom.

All this said, the teacher's own creativity must be protected and nourished. All teachers know how hard this is to do not only because the literacy agenda in universities is deeply anticreative, but because life competes, the days are never long enough, and good teaching exhausts the spirit. All the while, academic literacy insidiously appropriates and mimics the creative process. Perhaps we may restore creativity, then, by practicing a sequence of replacements.

FOR:

Social or professional security—befriend the creative anxiety which the poet May Sarton urged us to cherish as the growthpoint of art.

Clarity and reason—word-surfing, wild metaphor, and play like an otter's.

Fear of not producing—a belief in the curative and generative power of silence.

Willful control of one's "subject"—patient, graceful flailing. Wrestle with your angel.

Following instructions—surprise.

Deadline—faith in cycles.

Selling intelligence—squandering, giving it away. We are rich.

Above all, let us trust those early morning reveries given to us in the space between the generous psychic gifts of sleep and the daylight demands of consciousness; that time when rituals—the toothbrush, the coffee cup, the morning news—bridge dreamer and worker. Let us squeeze into that narrow space. Write there. Teach there. See everything that happens.

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Food for Thought
Writing and the Domain Beyond the Cognitive

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Up to now what has fallen within the cognitive domain seemed to be virtually anything that writing theorists claimed. Over several years participants in a "Beyond the Cognitive Domain" interest group at a national conference on college composition certified that well over 100 participants were in some way connected with everything else. Without defining the cognitive domain in any particular way, we asked participants what that everything else was. Terms were tossed around, spilling all over, colliding into each other, occasionally knocking each other out or eliminating the other. What emerged from one meeting was an ungainly list: affect, affect motivators, apprehension, attitudes, beliefs and their systems, consciousness, creativity, creative imagery, ideational fluency, emotion, emotional intelligence, empathy, feeling, felt sense, healing and writing, humanistic values, imagery, imagination, imagistics, insight, inspiration, intuition, kinesthetic knowledge, meaning beyond language, meditation, memory, motivation, mystical experience, self, subjectivity, writing as therapy, unconsciousness, values and their systems, and visualization.

It was clear that everyone had a different idea of what went on beyond the cognitive domain. In some instances, individuals differed so markedly in their ideas that they threw everything in or almost nothing. Other areas seemed up for grabs. Many didn't know what or where the domain was. But they knew it was somehow different from cognition. And they knew important things happened there.

Of course, defining the territory beyond cognition depends on how cognition is defined and where the boundaries are set. What is inside, outside, borderline? What does knowing mean for intellectual models of writing in order to understand what knowing means otherwise, or when knowing incorporates everything else as well.

Definitions of the cognitive domain vary widely. One of the more inclusive ones put forth by cognitive psychologist Ulric Neisser attributes to cognition "all the processes by which ... sensory input is transformed, reduced, elaborated, stored, recovered, and used" (1967, 4). Another definition includes all mental processes that we exercise in order to learn, store, retrieve, and use information, the byword of the field for many years. The notion of humans as information processing systems has surely outlived its usefulness, for in actuality the pivotal term is **knowledge**, with which the word information seems to be interchangeable. The broadest definition of knowledge refers to that which may be acquired through reasoning, perception, and intuition. Very little is excluded here. However, the intellect, a frequent synonym for cognition and intimately related to knowledge (insofar as the intellect means the capacity for processing knowledge), provides a more limited definition insofar as it means the ability to learn and reason through something, as distinguished from the ability to feel or will it.

To other specialists cognition has to do with intelligence that is driven by symbols (Simon, 1981) which has to do with the faculties of thought and reason. To still others cognition means propositional thought, without necessarily meaning the use of logic formally but rather the use of logic inferentially— along with mental models of the world (Johnson-Laird, 1981). This introduces cognition on the basis of symbolic structures, subdividing them into spatial, temporal, and motor types, after the work of Piaget. Guilford (1956) recognizes the way humans deal with different forms of information in its broadest sense with his concept of the Structure of the Intellect. Despite the apparent shifts in terms most psychologists agree that how we perceive, remember, and think is grounded in two attributes: 1) An internal symbol system from which springs structures, schemata, and/or representations marking its static quality; and 2) Processes, their dynamic complement, involving the "patterning" (Simon, 1981, p. 14), "manipulation, combination, and transformation" of these symbols (Mandler, 1990, p. 32). And one cannot be postulated without the other (Simon, 1982).

At about the time that psychologists lamented the myopia of traditional cognitive science,[1] the cognitive group in composition studies staked its claim to almost every form of mental functioning—with the possible exception of emotion. Although writing researchers Flower and Hayes (1984) have asserted that most knowledge occurs as conscious, verbal processes, they enunciated their multiple representation theory which recognizes several "languages" of thought: auditory, imagistic, schematic, and other ineffable forms of representing knowledge, particularly at the planning stages of writing. But an interesting thing happened. For writing specialists paying attention, the domain beyond the intellectual had shrunk substantially. Thus, what in 1980 was "everything else" slipped by 1993 into "what is left over."

Regardless of theoretical persuasion, most of us recognize knowledge as not limited to textual, logical, and fully conscious thought. Psychologist Donald Norman (1981) particularly complained that contemporary theories of the mind seemed to be "theories of pure reason" (p. 275) and, as such, were "inadequate and misleading" (p. 266). It is one thing to lament conventionally narrow definitions of cognition. It is quite another to covet all internal experience, to colonize it with intellectual principles as if all knowledge and meaning could be forced into a cognitive shoe.

There is an obvious point to be made here: We are straight thinkers. We are symbol processing organisms. The intellect is involved in almost all of what we do. But we are more. It is naive and inaccurate to believe that all ways of knowing may only be represented intellectually. It is not so much that the imperialism by cognitivists should be checked. Rather, we need to recognize the complex and unique qualities of the inner experience that do **not** fit readily into the prevailing structures. And this we try to do here.

My position is obvious and continuous with the way writing specialists generally view intellectual processes—in its more common and restricted sense as conscious, verbal, rational mental processes involved in acquiring and transforming knowledge.

Given that, I say there is an everything else, and a substantial one at that. What other ways of knowing seem to have in common is that in one way or another they don't fit the traditional paradigms. Let me briefly note some categories as I see them. In one class of internal events we come to know things without being able to explain exactly how we come to know them. Things pop into our heads. An implicit piece of knowledge is made explicit or clear, seemingly without mediation or discourse. Preceded no doubt by a complex selection process, these events happen instantly or slowly. Some of them may be termed intuition, insight, or inspiration. A second class of inner states is marked by biophysical changes. Our pulse quickens. We experience fluidity or tightness in our neck or shoulders, our stomachs or throat. We feel euphoric, in a peak experience, as Maslow called it, totally absorbed in an activity, in flow, as Csikszentmihalyi would say. We do not realize it, because if we did, we probably would not be in flow. Kinesthetic/ tactile and body sense—even emotion and motivation—might fall here.

A third cluster of mental functioning is characterized by images formed in our mind. The crucial pictorial/presentational modality that philosopher Langer and psychologist Paivio so brilliantly research stands sharply in a class of its own. We experience something without its original stimuli—commonly spatial or visual images. But some may be quasi-sensory like auditory, olfactory, even motor images. We can tell the difference between a musty and fresh room, a wet and dry hanky. Imagination, reverie, fantasy, and dreams fall here. Knowledge like meditative acts seems to by-pass intellectual structures in part or almost entirely. Rather than registering inner speech, meditation works to suspend it.

The most common feature of noncognitive knowledge (shared perhaps by all the above mental functions) is in the way it first reveals itself. This knowledge falls below our level of awareness or is verbally inept at the outset and may remain that way or rise to the cognitive to express, justify, or verify itself. A seemingly not conscious thing becomes conscious. The conscious thing becomes conceptualized, articulated, enacted. Even if it becomes part of thought, it still may resist rational explanation and, in some cases, conventional symbolizing.

An opposite phenomenon occurs in the therapeutic experience. Rather than internal experience serving written discourse, written discourse serves the inner experience. Here the salutary effects of language are central. And because therapy involves emotion, much of this essential experience, by definition, falls outside the cognitive domain.

Clearly, most of these forms of knowledge may be placed in several categories. Most interact so profoundly with one another that the human mind has yet to fathom the intricacies of those relationships.

This whole notion of a meaning system beyond the cognitive is, of course, not new. Philosophers long before Kant and through Langer have reminded us that there is considerable learning that goes unaccounted for, that we are at a loss to explain. We know more than we can say. We undoubtedly experience all these internal events. And they influence our mental lives and our language.

But this line of inquiry remains underdeveloped in composition studies. For obvious reasons. It is impalpable, ephemeral, even potentially incriminating. As teachers many of us are unwilling to risk the approval of our students, the respect of our colleagues, and our professional stature for such an unexplored enterprise, no matter what it may hold, particularly given our recent history. The 1980s saw exponential growth in cognitive psychology. Social theories followed, with powerful ideas about culturally constituted thought. But some writing specialists still seem dissatisfied with what these models say, do, and lead to.

The greatest need for growth in the field of rhetoric and composition lies now in the ways we create meaning beyond what is currently considered acceptable knowledge. A comprehensive view of composing conceptually and practically must include these other ways of knowing—call them unconscious, automatic, ineffable, inexplicable. There have been isolated advances in this uncharted area of composition studies. Topics at one time taboo are no longer excluded from conference presentations. People are talking about emotion in ways they never did before. People are using kinetics and imagery in ways they never dreamed of. People are hungry for transformation.

This line of inquiry responds to that need. I urge all of us to explore ways of knowing that we experience and that influence written language but have yet to be legitimated in composition studies. In a sense this work is an act of faith. But I do not mean to imply that it will send supporters to the river Ganges. Nor do I believe that as we pick up the torch and use it for lighting our path, we will not burn our fingers. I wish I could solve the mysteries of the discursive mind. But such an inquiry will surely raise more questions than they answer. As well it should.

The fact is that we do not understand the psychological content of our mental life much beyond conscious and verbal reasoning. It is not well understood by those trained to understand it. Perhaps in our lifetime we will learn very little about our full psychological life because we do not have the tools to study it, test it, and verify it. But we can make a start, small inroads into this territory. We can acknowledge such meaning, legitimate it, get it on record.

We do not live by intellect alone. What makes us think we write by it? We in composition studies are just beginning to grasp the potential of the inner experience that helps writing develop and to legitimate the writing that helps our inner experience develop. And this means nothing less than the mind in its whole humanity.

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[1] Simon meant it should be cross-disciplinary and include artificial intelligence (1981, 14). Norman meant it should include the social and affective (1981). Neisser urged it to have ecological validity (in Gardner, 1985, p. 134).

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Crossing Academic and Social Boundaries Through Technology

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Our collaboration began over eleven years ago when we designed and team-taught an interdisciplinary problem solving course for students in academic difficulty at Rochester Institute of Technology, a private, four-year technological institution. The purpose of the course was to help students develop critical thinking skills that could be applied across the disciplines. For instance, we explored the ways analogy and logic can be used to solve "problems" in both English and mathematics courses and used formal debate to tie together the critical thinking skills worked on throughout the course.

Since developing and teaching this original course, we have continued our collaboration during these eleven years in many forms. We've written about the benefits interdisciplinary collaboration provides for the teaching we do in our respective disciplines, and how mathematical problem solving can be enriched through cross-disciplinary linkages. In numerous workshops and conference presentations, we've explored how such topics as critical thinking and writing assessment provide opportunities for students and faculty to see connections between their disciplines and to see how skills developed in one context can be applied in other settings.

Although we continued our research and writing, changes in our appointments at RIT precluded our teaching together, yet we continued to look for ways to provide interdisciplinary instruction within a highly structured curriculum. In 1992 we found a way to again provide RIT students with the opportunity for interdisciplinary learning while working within college, curricular and budgetary limitations. This new project required minimal institutional support, but maximized curricular interaction between mathematics and English. We accomplished this by simultaneously registering the first-year math and statistics majors in Birken's Math Seminar (a first-year college exploration course) and in Coon's English Composition. In addition to meeting the stated goals of these two RIT credit-bearing courses, we were interested in encouraging active learning, making students aware of the connections between our traditional academic disciplines, developing critical thinking skills, and raising questions about the nature of education. We developed a common list from which we chose overlapping, thematic readings, addressing such topics as education, the impact of technology, ethics, and progress. We introduced students to the debate begun by C. P. Snow in "The Two Cultures," which focused on the separation between the humanities and the sciences. Through projects such as formal debates, faculty interviews, and group presentations in competition for hypothetical research grants, we fostered the development of students' skills in oral and written communication and critical thinking.

We repeated this collaboration between Math Seminar and English Composition the following year (1993) with different readings and new projects, and by 1994 we were looking for ways to expand the interdisciplinary experience beyond the classroom. Technology provided a natural means for us to do this.

Since RIT is an institute of technology, the campus environment supports and encourages new uses of technology for teaching and learning. All students, faculty, and staff have access to the VAX computer system, and through it, access to e-mail, the internet, and the VAX Notes software, an electronic conferencing tool. There are computer labs throughout campus, both in the academic buildings and in the dormitories, and the Educational Technology Center provides assistance and training for faculty to learn new technologies.

We had experience using technology in our collaborative and individual research, and "The Impact of Technology" had been a theme in our parallel courses, so it seemed logical to incorporate new communication technology into these two courses. We wanted to see how technology could be used to enhance the interaction among first-year students, as well as between these students and faculty. Secondly, we wanted to acquaint our students with the upperclass math and statistics majors who had participated in the collaborative Seminar/English Composition courses in previous years, but most importantly, we wanted to use technology to create a different learning environment.

During the fall quarter of 1994, we created an electronic conference entitled *Bridges* using the computer software VAX Notes. A Notes conference can be open to the entire campus or limited to certain participants. In this case, the conference was limited to first-year math and statistics majors, about a dozen upper-class math and statistics majors, four Liberal Arts faculty members, and four math and statistics faculty. We (Birken and Coon) acted as moderators of the conference, adding topics of discussion, monitoring responses, warning participants if they crossed the boundaries of "proper behavior" under the RIT Code of Conduct for computer usage, and occasionally nudging conversation in a certain direction. However, the moderator role was a relatively simple one since the conference took on a life of its own very rapidly, allowing us to take a back seat and become voyeurs to a most fascinating "virtual classroom."

There are many reasons why electronic dialogue differs from classroom discussion: it may be more private, it can be conducted over an extended period of time, and it allows for a continuation of discourse without the limitations of physical classroom space or set time frames. Furthermore, both professor and students have time for reflection both before and after responding and multiple voices can "speak" simultaneously, without hierarchy. The informal format of electronic communication invites participation by both the articulate and the shy student. We, as professors, are repeatedly amazed at how eagerly and easily some students use electronic conferencing to offer opinion, argue points and engage in true academic discussion. On the other hand, some students and faculty are wary of revealing themselves publicly, especially when the text remains permanent.

We have collected several passages from the Notes Conference which demonstrate the principles we observed about the nature and range of electronic communication. As these students and faculty engage in a free-wheeling, often allusive conversation, they are also participating in a serious discussion of the nature of traditional academic disciplines.

[Author's note: Using a lap-top computer, overhead projection system, modem, and telephone line we dialed into the RIT VAX computer system and demonstrated how to log on to the Notes conferencing system and access the dialogue found in our conference, *Bridges*.]

Note 3.0

Every student at RIT is required to take core courses, concentration courses and electives in the Liberal Arts. Why are these courses considered essential requirements of a technical education? What are your own "favorite" areas from the Liberal Arts? Least favorite? Are skills developed in the Liberal Arts (reading, writing, critical thinking, for example) used in science and math courses?

Note 3.1	Why Liberal Arts?
Student 1	-< But of course >-

I think the core courses are a good idea because it forces students who normally might not take any liberal arts to take it and it's good to be well rounded. No offense, Dr. Coon, but my least favorite parts of liberal arts are history and literature. I suppose I should have waited till I finished taking your literature class to tell you that, but I trust you won't take it against me. Of course the skills developed in liberal arts are used in science and math courses. We wouldn't be able to solve any real world problems without liberal arts.

Note 3.2 Why Liberal Arts?
Student 2 -< More than I expected, also >-

Uh, no offense to the math department, but my favorite class this quarter is International Relations. I am taking this class merely for self-edification. A lot of students have resented the fact that they have to take Liberal Arts. (But then a lot of students resent the fact that they have to get up before noon and actually WALK to class.) But science without liberal arts is like Moe without Larry and Curly (never did care much for Shep), Garfunkel without Simon, Abbot without Costello, Ernie without Bert...I think you get the point. Science teaches people to look at things objectively, focusing in tight on tiny details. Liberal Arts also teaches one to look at things objectively while showing that many look at things subjectively, and teaches students to recognize objects from all points of view, or at least more than one.

Note 3.3 Why Liberal Arts?
Faculty 1 -< talk, talk, talk >-

According to my "Reader's Encyclopedia," the seven Liberal Arts are grammar, logic, rhetoric, arithmetic, geometry, music, and astronomy. It's an interesting collection. I wonder if a person trained in these seven would meet our criteria for the educated person. I also discovered that the "liberal" part refers to the people for whom this curriculum was thought appropriate—free men, not slaves or serfs or women of any class.

I started out my little research project to help me frame a question I have always wanted to put to people who consider themselves scientists. (Are mathematicians scientists? If you're not, you'll have to do until a real scientist comes across the bridge.) Is a scientist any more objective than a poet? a piece of research more objective than a poem?

I find myself increasingly doubtful about the functionality of the category "objective" but at the same time I need and use the category. I hope this isn't too vaporous a topic so early in the quarter.

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Note 3.4 Why Liberal Arts?

Student 2 -< Difference >-

In response, I think that a mathematician is a great deal more objective than a poet. A poet looks at, say, a flower and tells the world what he or she thinks when looking at this flower. A Mathematician looks at the same flower and may make a mathematical model of the arc of the petals as they bow away from the stem (or stamen, whatever). This may not be the best example, but the poet is subjective because he writes what he sees. The mathematician is objective because she writes down what is. I lost myself somewhere. But I feel that there is a huge difference between subjective and objective...

Note 3.5 Why Liberal Arts?

Faculty 2

This is a very interesting question... "Objective" and "subjective" are certainly useful distinctions...As [Student 2] points out, the mathematician can "see" and "describe" the arc of the petals with a precision that is (perhaps) devoid of ambiguity, while the poet's language has the potential for all kinds of non-literal meaning. But what about the scientist who employs a metaphor to describe something he observes? (I'm thinking of the description of chaos theory in which a butterfly's movement in Japan sets off a typhoon half-way around the globe...) Or the poet who makes a poem of the exact line-by-line transcript of a dying person's medical record? In each case the boundary between the literal/ observable/objective and the figurative/subjective is blurred...

Note 3.7 Why Liberal Arts?

Student 3 -< Who's Definition? >-

Until last year, I hated english. Now I actually enjoy it. I think liberal arts are a good part of academics. Without liberal arts I would never have found my true identity or figured out what I really believe in. I would have gone on agreeing with everyone . . . I, upon reading the response by [Faculty 1], looked up the definition of liberal arts in my dictionary. According to Webster LA is language, history, philosophy, literature, and abstract science. I think according to the encyclopedia, mathematicians and scientists would be defined as artists and poets would be defined as scientists? Are scientists more objective? Not really. I think poets are objective but tend to be more abstract and harder to understand in some cases...

Note 3.8 Why Liberal Arts?
Student 2 -< New Life! >-

Okay, this discussion needs to be opened up. What does mathematics have in common with English? Be substantive here and look for the things that people use both math and/or english to do. . . I am feeling verclempt. Discuss amongst yourselves.

Note 3.9 Why Liberal Arts?
Faculty 1 -< Similarities? >-

Since both math and English are languages (so to speak), both can be manipulated by humans to communicate with other humans, both can be learned. In a natural language such as English, there are a variety of ways a given idea can be conveyed. Is that also true of math?

Note 3.10 Why Liberal Arts?
Student 4 -< Re: Similarities? >-

Yes, one idea can be expressed in a multitude of different ways using mathematics! However, there is a distinction from natural languages. Two differently worded statements in English can never mean the same thing since words are broad in scope and often ambiguous. In a system of mathematics clear identities are proved. . .

Formally, there is no connotation to a mathematical expression, only a denotation. Informally, this isn't really true since mathematicians need to be aware of many different forms of the same idea in order to create new links. Often when stuck in the middle of a problem, it is the substitution of an expression with an identical form that provides a spark of intuition.

The above limited, unedited sample from the *Bridges* Notes Conference illustrates the ways in which electronic discourse may become freer, more introspective and personal than that conducted in a traditional classroom. There were other advantages to using this new medium as well: students discovered how to utilize the RIT computer system and found immediate applications for it; students developed "big brother/sister" relationships and new relationships with faculty; students arranged informal tutoring sessions among themselves and shared institutional information about registration, course requirements and teachers to seek out for certain classes. One advantage that especially pleased us was the way communication was encouraged among an extremely diverse group of male and female students. The incoming math and statistics majors included urban and rural students, international students, and deaf students, who not only brought their individual cultures and experiences to the Notes Conference, but also discovered an environment in which they could participate equally, and sometimes more confidently, than in person.

Although this new medium did open up greater opportunities for interdisciplinary communication, it also posed some difficulties. Participants found it difficult to read others' emotions. Some participants, particularly faculty, were "readers only" who resisted writing "notes" of their own, thus revealing little of themselves and their opinions to the group. Other participants tended to dominate conversation when we would have liked a greater range of participation. Even though the access to the conference was convenient and free, it did demand extra time, often at night, from us and from the other participants. And yet, as we've explored this medium, which is clearly evolving its own conventions, we have come to believe it is creating new possibilities for communication in an academic setting. It is an emerging form of discourse that gives vitality to written expression, sharing characteristics of both formal writing and informal speech. As we had hoped, the Notes Conference encouraged participants to cross academic and social boundaries. It has also opened up new pedagogical and social possibilities for us and our students as *Bridges* evolved into a "virtual meeting place" for the Math Club and we established new Notes conferences for courses in our respective disciplines.

Marcia Birken and **Anne Coon** are Associate Professors at the Rochester Institute of Technology, Marcia in the Department of Mathematics in the College of Science, and Anne in the Department of Language and Literature in the College of Liberal Arts. They have worked together collaboratively for eleven years at RIT, exploring such areas as interdisciplinary problem solving and critical thinking. Much of their work has focused on pedagogy for and retention of first-year students and students at-risk. Their conference presentations and publications have addressed critical thinking in writing and mathematics, development of problem solving skills through cross-disciplinary instruction, writing assessment, and linkages between literature and mathematics. Their individual interests include research and writing on Henry James, Elie Wiesel, Amelia Bloomer, and seabirds of the Galapagos Islands.

MULTIMEDIA INSTRUCTION: ONE SOLUTION TO THE DEVELOPMENT OF DIVERSE LEARNING ENVIRONMENTS

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> These are your tools. Your tools will teach you things. They will teach you things you didn't even know you want to know.
>
> Laurie Anderson

Introduction

Multimedia technologies, and their implications for the delivery of diverse learning environments, offer considerable promise to educators. Multimedia learning environments are interactive, media-diverse integrated systems that promote engagement through student-centered activities, including guided presentations, manipulations and explorations among interrelated learning themes (Hannafin and Gall, 1990). Interactive multi-media environments are powerful learning tools, but they also offer unique pedagogical challenges to educators and learners. Because multimedia instruction accommodates individualized "paths" through instruction, its design requires careful analysis of content, instructional strategies, information representation and learning styles of potential users. In addition, educators who use multimedia instruction must also analyze these instructional paths to determine how students should interact with the information contained therein. Finally, for those educators interested in assessing learning strategies, multimedia environments can double as research tools, offering new possibilities for the study of how individuals access, organize, and store information.

This paper will discuss the potential of multimedia instruction to meet diverse learning styles, instructional strategies and content areas. This discussion is predicated on the following assumptions:

- Individuals have learning style preferences
- There is an interaction between learning style preferences and instructional strategies

- **Matching instructional strategies to preferred learning styles can improve instructional effectiveness**

- Multimedia technology offers a variety of instructional strategies within one learning environment

- Effectively designed and utilized multimedia instruction can address the needs of all learning styles

- Further research on learning styles can be conducted using multimedia environments

Learning Styles

For the purposes of this paper, the following is the definition of a learning style: a consistent **pattern** of how an individual begins to **concentrate on, process, internalize and remember** new and difficult information.

That people learn differently is certainly not a new idea. Psychologists in Germany were considering cognitive style around 1900 and Carl Jung's work on "psychological types" first appeared in 1921. Gordon Allport (1961) used the word "style" to refer to consistent patterns on the part of individuals and Lowenfield identified "haptic types" who experienced the world primarily through touch and "visual types" who relied on seeing. Klein (1951) identified "levelers," who tended to retreat from objects and avoid competition and "sharpeners," who tended to be competitive and had a great need for attainment and autonomy (Fizzell, 1984). The research of Benjamin Bloom and others gave rise to the concept of mastery learning, in which students' achievement is held constant and teaching methods, materials and time available are sufficiently flexible so that practically all learners are able to achieve at a high level. Clearly contained within this approach is a recognition that all individual learners have their own preferred learning styles and that teachers have some responsibility for gearing their teaching styles to "fit" the preferred learning style of the learner (Henson and Borthwick, 1984). More recently, Howard Gardner's book, Frames of Mind, offers convincing evidence for the existence of seven intelligences instead of one (Gardner, 1983). Gardner's research further supports the notion that individuals differ widely in their capabilities and learning preferences and that these differences can be innate, learned or culturally-bound.

Does providing students with learning experiences that match their style lead to improved learning? The research on instructional-preference models lends weight to this idea (Terrell, 1976; Fournier, 1984; Canfield, 1980). In addition, the issue of learning how to learn is underscored by the indication that students who learn about their own style achieve higher grades and have more positive attitudes about their studies, greater self-confidence and more skill in applying their knowledge generally (Claxton and Murrell, 1987).

How do educators provide students with sufficient options in their learning environments to accommodate diverse learning styles? The next section discusses one proposed solution—multimedia technology.

Multimedia Technology

Educators have always had access to various construction tools for creating learning environments. Traditionally, these tools have consisted of concrete objects, such as books, films, physical models and instructional strategies, such as lectures, discussions, role playing or cooperative learning. These tools work together to create environments for effective and efficient learning. Unfortunately, it is difficult, if not impossible for an individual instructor to utilize more than one tool at any given time; likewise, in most instances the instructor controls the choice and timing of these tools. These limitations handicap students whose learning preferences differ from the teacher's choice of instructional delivery tools as well as teachers who wish to employ more than one method of instructional delivery. Multimedia technologies are one solution to this problem.

Multimedia instruction refers to computer-managed material that is multi-sensory, multi-modal and multi-representational. Multimedia instruction typically combines text, graphics, sound, and moving and still images within a flexible system capable of responding to diverse learning styles and instructional strategies. Using the potential of the computer to creative interactive and responsive instruction, educators can employ multimedia to provide multiple learning options within one instructional environment.

To illustrate the capabilities of multimedia instruction to respond to diverse learning styles, this paper will use the CD-ROM program "A.D.A.M." as an example of an extremely flexible environment. Developed by A.D.A.M. Software, Inc. and marketed through Benjamin Cummings/Addison-Wesley, A.D.A.M. Comprehensive is an interactive anatomy and physiology program that combines extensive scientific information with outstanding anatomical graphics, animations and sound. Originally designed for medical schools and advanced biology curricula, A.D.A.M. Comprehensive now has two derivatives;

(1) A.D.A.M. Essentials—targeted for middle and high schools, community colleges and introductory biology courses; and (2) A.D.A.M Physiology—a program designed to teach the fundamentals of physiology in introductory biology courses.

Anatomy is a dynamic subject, full of blood racing through veins, nerve impulses leaping synapses, and oxygen filling up alveoli (Schnobrich, 1994). The driving pedagogy behind the design of the A.D.A.M. CD-ROM is: (1) to offer options to the student as they study the intricacies of the human body, and (2) to make the study of anatomy as active a process as possible. To accomplish these two goals, the A.D.A.M. designers have supplied a program which allows students to select the gender and skin color of the model, gradually expose layer after layer of the human body, travel from the respiratory to the muscular to the digestive system **and** discover how these systems work together. **Options** abound as students decide how to explore, examine and learn about their personal cadaver. Once a student has selected an area for study, he or she can view the area anteriorly or posteriorly, zoom-in or zoom-out at varying levels of magnification, move through over a hundred anatomically-accurate layers of the body or point to specific structures to reveal labels with both common and scientific names. A particular system can also be explored separately. A supplemental menu offers 37 animations—including animations of the heart pumping, the anatomy of the brain, and blood clot formation. A series of on-screen puzzles tests students' understanding of anatomical relationships. The menu also offers overviews loaded with comprehensive information, correct pronunciations and access to specific animations or cross-referenced textual material (Schnobrich, 1994).

To illustrate the flexibility of the A.D.A.M. program, this paper will describe the paths of two different students as they interact with the information contained in this multimedia program. To begin this process, the students are identified according to their preferred learning styles:[1]

1. Student A: Sensing Thinker (ST). Prefers organized, systematic, activity-oriented, instructor-directed atmosphere. Learns best from repetition, demonstration and actual experience. Likes competition and independent approaches to learning.

2. Student B: Intuitive Feeler (NF). Prefers not to follow step-by-step procedures but rather to move where intuition takes her. Looks for new and different ways to solve problems. Enjoys activities for self-expression and projects which call upon intuition, feelings and creativity.

From the brief descriptions above, we can postulate certain learning preferences for these students. For example, we can assume that Student A, the sensing thinker, would prefer an organized and logical sequence to his or her instruction. In addition, this student would probably also enjoy engaging in activities designed to elicit engagement. If these activities incorporate a competitive element, all the better for Student A!

Compare these strategies to those preferred by Student B, our intuitive feeler. He or she would feel most comfortable in an open and exploratory environment that models a discovery approach to instruction. Opportunities for problem solving and creative expression would also appeal to this learner, as would cooperative, not competitive activities.

How does the design of the A.D.A.M program accommodate the diverse needs of these two learners? First, and foremost, it provides instructional **options** from the initial contact. The opening screen of all the A.D.A.M. programs contains an organizational menu at the top of the screen, a selection of "tools"[2] along the left side and bottom of the screen, a half-screen window where the body is located, and another half-screen window that contains a library and glossary terms. Like most multimedia programs, there are no direct instructions to the user for entering or navigating the program. He or she is expected to begin interacting with the information however they choose, unless they receive guidance from their instructor.

It is safe to assume that Student A, when presented with this plethora of possibilities, might become overwhelmed and confused. It is also safe to assume that Student B, preferring exploration to directions, would "dive in," quickly clicking on buttons and tools to explore all of the options in the program. Thankfully, initial impressions are not permanent, and both these students can receive the guidance they require to make interacting with this program a valuable learning experience.

If Student A can overcome his or her initial impressions of A.D.A.M. as a vast, unorganized mass of information, they can begin to methodically interact with the program with the help of the manual, exercises designed by the instructor, or careful explorations on their own. Student B, on the other hand, could be allowed to freely explore this environment for a while, and then be "reined in" by the same assignments designed for Student B. Or, if the instructor is willing, Student B could design their **own** exercises, employing the creativity and intuition indicative of this style. Using these strategies, the same multimedia program can accommodate both students, with some instructor intervention.

To facilitate the imposition of structure onto A.D.A.M., Benjamin Cummings has just announced the development of the A.D.A.M. Student Notebook (200 pages, $13.95). This notebook will consist of 12 chapters, one for each body system and will include documentation on how to use the A.D.A.M. software. Each chapter will also contain learning objectives and explicit connections to Elaine Marieb's "Human Anatomy and Physiology" textbook, which served as the content base for the software. A series of questions and exercises in which students use the various A.D.A.M. tools (including pronunciation) are designed to encourage critical thinking and cooperative learning experiences. Following each chapter is an annotated list of key concepts and key structures on A.D.A.M. related to the body system just studied.

Clearly, the Benjamin Cummings Publishing Company has recognized the needs of diverse learning styles in developing this supplemental material for use with its multimedia instruction. The flexible nature of the program, combined with carefully-designed instructional strategies should provide an environment in which all learners will be able to master complex information about anatomy and physiology.

Conclusion

Multimedia is one tool that educators can use to address the issue of diverse learning styles in their courses. However, use of these tools requires that we spend time analyzing our students, the programs we plan to use, and the information we want to convey. Unaided by instructor guidance, multimedia can become ineffective, inefficient and potentially harmful to naive learners. Multimedia is a powerful tool, but like most tools, it requires human interaction to make it work. Happily, with this technology, we are not being replaced, we are being enhanced.

Notes

1. Many learning style inventories exist. This author uses one designed by Hanson, Silver, and Strong, Inc. of Princeton, NJ. Students completing this inventory are assigned to one of four categories: Sensing Feelers, Intuitive Feelers, Sensing Thinkers and Intuitive Thinkers.

2. These tools are icons that illustrate options for zooming in and out of an image, "doors" to the operating room, dissection tools such as a scalpel, a sponge for cleaning incisions, suturing instruments, changing from anterior to posterior views of the body, and many more.

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Liberal Education and the Implicit Curriculum: Faculty Response and Responsibilities

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The process and the substance of liberal education is currently under close scrutiny. Canon wars, lists of "what-every-educated person-should-know," books about virtues, stands on the place of gender and sexuality in the curriculum, and meteoric literary fashions, among other passing influences, have, to say the least, created a tense atmosphere on most campuses. Wariness among college bound students and their parents regarding future employment, too, contributes to the restiveness in the academy—there is more soul searching than ever regarding the practical side, if any, of liberal education.

The response to the uncertainty about what it is that educators and institutions do has been to examine critically the liberal arts and sciences curriculum. Multiculturalism, diversity, and interdisciplinary pursuits, to name just a few trends, have been (with greater or lesser success) stirred into the curricular pot. It appears that teaching has begun to catch up with research as a coin of the academic realm, and even the most stalwart research institutions are beginning to come around to the view that pedagogy is a relevant concern. Evaluation of students (how they learn, what they retain) and faculty (what they do, how they teach) continues to gain momentum. These responses are all to the good in reforming the liberal arts and sciences curriculum.

Important as they are in their own right, our concern in this paper is *not* with explicit changes to the curriculum; instead, we address the problem of what we call the implicit curriculum. By implicit curriculum, we refer to the ideas and values conveyed by liberal arts and sciences curricula (and the faculties who teach them) independent of (and sometimes in opposition to) the dramatic changes wrought by the uncertainty of the last several years. The implicit curriculum in liberal education has more to do with what we fail to convey in the classroom about intellectual, social, and political issues than with what we do say about such topics. For example, institutions often present themselves as advocates of gender equality, but in most cases curricular attention to women is ad hoc.

This article presents one approach to exploring the implicit curriculum at Moravian College, a selective liberal arts and sciences institution in eastern Pennsylvania. We discuss the results of a one-day workshop on liberal education and the themes which emerged from essays written for it. We then offer some prescriptions for revitalizing liberal teaching in light of and in addition to these themes from the implicit curriculum. We believe that faculty members have a responsibility to engage the various educational problems posed by these implicit curricula. We invite our colleagues from other institutions—acknowledging that they will have many similar as well as unique concerns—to consider our approach as a model with which to reform the education currently received by students.

The Call for Papers: A "Liberal Education Workshop"

Based on various discussions centering on liberal education's role in a to-be-revised curriculum at Moravian College, the Curriculum Implementation Committee issued a "Call for Papers" for a Core-sponsored "Liberal Education Workshop." All members of the faculty and administration were invited to submit papers on liberal education (broadly defined). The "Call" specifically recommended that potential authors consider contributing papers addressing "A conviction about liberal education that colleagues should understand and be guided by; A decisive issue that must be thought through and resolved; In broad and provocative strokes, an articulation of liberal education as outcome and as structured process." Other topics were, of course, welcome. A caveat was included in the Call, however: Contributors were specifically asked *not* to focus on discrete problems at the College; that is, the discussion was to "...elevate us, if only temporarily, beyond existing departments, disciplines, structures, convictions, stakes, controversies, etc." In short, the elucidation of traditional "turf" issues was to be avoided.

Fourteen papers were submitted to the workshop, and they were written by faculty from the College's Departments of Art, Economics and Business, English, Psychology, Religion and Philosophy, History, Mathematics, Political Science, and Chemistry, as well as one submitted by the Associate Dean of the College (copies of the papers may be obtained by writing the authors). The collection of papers were formatted into a similar style, printed, bound, and distributed a week in advance to sixty-eight faculty members and administrators who signed-up for the workshop. (Since the workshop, a second "Call for Papers" was issued by faculty members who could not contribute written work for the first meeting. Copies of this second collection of papers may be also be obtained from the authors.)

The workshop was held on Friday, June 3, 1994, a date following the end of the spring semester. The day was divided into a morning and an afternoon segment. The morning segment consisted of two one-hour paper sessions, with a panel of seven papers in each. After each panelist gave a two minute overview of themes presented in his or her paper, the remainder of the hour focused on questions and responses initiated by the panelists themselves and the audience. A designated recorder kept track of the ebb and flow of the discussion. After a luncheon, the workshop participants were divided into hour-long discussion groups with an assignment to discuss what aspects of liberal education should be considered in the forthcoming deliberations. These discussion groups reported the results of their efforts to one another during the general session that comprised the remainder of the day.

Three Themes in Liberal Education

Our review of the fourteen essays and resulting discussion highlighted three specific themes: Intellectual regionalism and the dis-integration of knowledge, the risk of harboring illusions about liberal education, and capital's role in higher education. We will consider each theme in turn.

Intellectual Regionalism

Steve Gordy (1994) argues that the evolution of the liberal arts and sciences during the modern era is marked by a powerful irony. It is this irony that underlies our mounting concern over the apparent lack of values- and moral-formation in American education. Roughly since the time of Descartes, liberal education has flourished in its embrace of a conviction that is tantamount to "enlightened faith": The interrelated possibilities of human well-being, freedom, and responsibility are enhanced, even ensured, through the appropriation of critical skills to be applied in mastering the world. That "faith" entails a particular morality. Van Harvey (1966) has called it "the morality of critical judgment."

The morality, if not the faith, became the *sine qua non* of modernity in the West. Sound judgment in critical decision-making (the formulation of truths) must be guided by the exercise of human reason and without recourse to external authority, must be conceived on the basis of methodical case-making, and must be argued to the satisfaction of peers. Beginning in the late seventeenth-century, then, the world became the object of critical skills. What is crucial to appreciate is that modernity has not been a process of simply mastering nature through the natural sciences and technology. It has also been a process of wresting cultural, political, and economic hegemonies from pre-modern institution (churches, monarchies, feudal and mercantilist systems) in order to increase the range of individual creativity in ordering the world.

Discrete natural and human sciences evolved as *regional criticisms*. Each of these sciences attends to a specific region of the world (biology, music, literature, economics, and so forth), the fact that many of the sciences are interdependent notwithstanding. Faculty experience this regionalism through the polity of higher education and research: Departments, divisions, colleges within universities, post-baccalaureate degrees attached to specific subject matters, scholarly guilds, and academic publishing houses. The polity even extends to government (at the federal level, National Endowments for the Arts and the Humanities, and the National Science Foundation). This polity—perhaps the most powerful "given" in higher education today—is symptomatic of a deeper and more decisive phenomenon.

The success of the various criticisms at interpreting their respective regions has been remarkable. It was the very success of these natural and human sciences that encouraged the gradual entrenchment of disciplines and of specialties within disciplines. But the world as such was thereby lost to scholarly sight. The more learned we are in the dispensation of the reigning polity, the more myopic we become. Reward for our accomplishments in teaching and research (salary, promotion, prestige) are largely determined by canons established within institutions of scholarly specialization.

For the majority of us, complicity and intellectual regionalism results in one or the other of two dispositions: (1) Practical indifference to the unity of knowledge as a problem or (2) scholarly combativeness in laying claim to definitions of reality and what counts as knowledge. These dispositions are transferred to our students (the former more so than the latter). This transferral is routinized in our polity because it is necessarily the students' polity, as well. For a long time now, education in "liberal arts and sciences" institutions has emphasized location of the overwhelming majority of students within one or another of the intellectual regions. Prominent among the endeavors of faculty is producing "majors" within departmental and divisional structures, and often specialty-tracked students within a particular department. Locating students within particular intellectual regions has dogmatic and moral implications: To the extent that issues of truth and value are at stake, then it is truth or value as that intellectual region conceives them.

We find ourselves in a genuine dilemma. It is more than a merely intellectual dilemma: It is also a moral dilemma. On the one hand, we organize ourselves as faculty, conduct our research, and facilitate learning on a regionalized basis. On the other hand, the everyday world in the midst of which each student's life will unfold is interdisciplinary. The everyday world is complex and subtle beyond the reach of intellectual regionalism. Are we preparing our students to adjudicate among truth claims in the everyday world? As things now stand, most students are able to enter seriously into a single region of knowledge and are otherwise left to be dependent upon the services of specialists. We cannot afford to mask this dilemma in specious concessions to the pragmatic: Respect for one another's intellectual domains, the irrelevance of truth to advancement in our respective guilds, the disservice imposed upon students if we force them to muddle through the issue of truth, and the disinterest of the employment marketplace toward truth in an interdisciplinary sense.

One purpose of liberal education is to enhance the freedom and responsibility of each student through the course of his or her lifetime. For most of us, at least, that lifetime is not confined to a particular intellectual region nor even to a particular profession. A lifetime is spent in the world where all regions are already interwoven beforehand. It is only in the "ivory towers" of higher education that the regions are susceptible to some unravelling. The heuristic value of the unravelling notwithstanding, the world itself persists in being remarkably durable.

Divisionalizing, departmentalizing, professionalizing of students is as illiberal as it is impractical—and for the very same reason. Faculty participate in covering over the world by means of our methodically critical parsings of it. One reading of the hue and cry over higher education is that the time has come for faculty to face the question whether the world in fact imitates the polity that governs our vocation.

Illusions About Liberal Education

Playing on Freud's title, James Yerkes (1994) identifies four illusions of liberal education. By illusion, Yerkes refers to wrong beliefs that we may actively or passively hold in our lives as teachers and scholars. While the illusions surface occasionally in the course of teaching, they tend to be implicitly present in the structure of the curriculum as such.

Yerkes (1994) begins by arguing that it is an illusion that students can be properly educated in the liberal arts and sciences even if they are not made aware of the limitations of a given discipline's methods and results. On its face, this first illusion is one that seems obvious. Few faculty would actively inculcate such a belief. Nonetheless, with modest reflection, most of us will find ourselves to be "guilty as charged". We either participate in this illusion or, give a nod to the fact that a given issue has not been "researched in our field" or that such a question does not fall within its purview.

The second illusion is related to the timely topic of multiculturalism in higher education. Yerkes suggests that moral relativism is neither a satisfactory nor a necessary intellectual companion to the appreciation of diversity among students. We need to provide students with a context in which to evaluate controversial thought and action without deferring to *ad hoc* moral pronouncements.

The third illusion may prove to be the most problematic for faculty who typically approach liberal education from a secular mind set. Students cannot be said to be properly educated in the liberal arts and sciences if they lack meaningful exposure to the critical study of religion. More particularly, students need to understand the historical and cultural development of religion (as faith and practice) so that they may be constructively self-critical of their own views. Such self-understanding is necessary in order to undertake any critical evaluation of religion on a multicultural basis—one cannot, after all, have a meaningful dialog about controversial religious practices (e.g., male and female circumcisions) without comprehending the world view of the tradition(s) involved.

The fourth and final illusion is that human nature is reformable. Here, Yerkes is suggesting that it is intellectually misguided to assume that teaching about virtue (as knowledge) will automatically result in virtuous behavior. Life is simply more complex than this seemingly straightforward connection warrants. We need to impart to our students an understanding that accepting a code of morals does not preclude its corruption, as history and for many of us, bitter personal experience, teaches. In short, we must convey the idea that human existence is characterized by both possibilities and limitations—to do otherwise is to condemn our students to accepting the implicit notion that human nature is evolving toward an ideal state.

Capital's Role in Higher Education

This section is somewhat different than the two previous ones. It introduces two opposing views and attempts to synthesize their arguments into one coherent presentation.

Jim West (1994) and Gary Olson (1994) discuss the role of market forces and career or outcome-oriented curricular decisions. More specifically, two issues were the degree to which a college curriculum becomes a matter of what "sells"; and the degree to which faculty reinforce, rather than challenge, student views regarding the United States as a predominantly "corporate" culture.

The tension that is created by the relationship between a traditional liberal arts curriculum and the demands of both students and employers is not new. It is likely to be the case that the ideal liberal arts curriculum, one that challenges students to think in new ways about ideas that they have not been exposed to previously, to mature intellectually (i.e., become an independent thinker) and have an increased awareness of one's place in history, could be ideally constructed in an economic vacuum. This way courses, majors, even entire academic programs, could be combined and constructed to create the most effective, meaningful academic experience, without concern for (1) how these programs would be paid for and (2) whether students would enroll in them in sufficient numbers. Unfortunately, no such vacuum exists. Serious liberal arts students demand programs that will not only broaden their perspective, but also prepare them for the world of work. Many of these students will end up working in an environment where skills previously viewed as vocational (i.e., computer literacy) are simply expected.

One option, of course, would be to abandon the liberal arts mission and become a technical training school. Although this may seem on the surface to be appealing to those students who go to college so they can "get a job" and to firms who want trained technicians, even these constituencies would probably regret their decision. Consider the current corporate climate. Employers of the world want students who can write effectively, think critically, act morally, and work productively (using current technology). Thus "job oriented" students should be demanding the same. The charge of the liberal arts college, then, is to push students to think in new ways, challenge accepted methods of inquiry and practice, gain an historical perspective, and to learn about emerging technology and how to use it responsibly.

The opportunity to spend four years studying at a liberal arts college is indeed a luxury. Certain aspects or moments during that time when true development of the individual takes place are, in one way, priceless. In the pragmatic world of tuition and college loans, however, there is a real cost. We believe that if liberal arts institutions truly succeed in their missions, not only can those benefits which cannot be measured in dollars be obtained, but the payment of the pecuniary costs will become a non-issue. For those students who succeed in mastering the intellectual challenges presented while in college will become those whom employers learn to value most.

Prescriptions for Liberal Education

It is our inclination to prescribe activities, not solutions, and to call attention to problems which we know to exist at our own and many other institutions of higher education. We have already called attention to several issues in earlier sections of the paper. In more summary fashion, we want to add some additional problems we believe that faculty must engage. We do not offer solutions because we are not in agreement ourselves; this fact became apparent to us as we composed this paper. Instead, we suggest several strategies which the faculty at Moravian College have pursued to address the problems identified in our paper.

(1) Obviously, we recommend that our colleagues at other institutions consider holding a workshop on liberal education and to invite position papers for community discussion. We found it to be one of the most rewarding experiences of our teaching careers, and were pleasantly surprised to learn how many teachers from disparate disciplines shared some perspectives on liberal education.

(2) Faculty interested in combatting intellectual regionalism at their institutions may wish to pursue interdisciplinary study in a community wide fashion. Members of our faculty pursued and obtained funding for two interdisciplinary summer seminars that involved 30 or so instructors from the humanities, and social and natural sciences. These teaching faculty met daily for six-weeks over two consecutive summers in order to read and discuss important texts from the Western canons of literature and science. Moravian College has recently committed additional funds to promote faculty initiated summer seminars.

(3) Interested faculty should consider meeting to exchange teaching strategies. Pedagogical seminars and workshops can be enlightening to even the most experienced teachers. These events are typically most rewarding when faculty from different disciplines interact to discuss strategies that have and have not worked in their own classes in the past.

(4) College and university administrations should be encouraged to financially support and reward presentation and/or publication of interdisciplinary scholarship and pedagogy. Such support serves as more than mere polemics where the problems of dis-unity in knowledge and liberal education are concerned. Our institution's administration has increased the amount of interdisciplinary funding available for faculty development and research and, where appropriate, has underwritten ventures that break down disciplinary boundaries and promote pedagogical innovation.

(5) Faculty who are accustomed to teaching alone should be encouraged to involve themselves in the pleasures (and acknowledged rigors) of team teaching—from course design to syllabus creation. The give and take among faculty from diverse disciplines can be as invigorating as it is daunting—but we believe that the rewards are substantial. Through team teaching, we push one another to extend our critical skills beyond familiar subject matters.

(6) College or university wide soul-searching where curricular matters are concerned can be an opportunity for institutional renewal rather than hand-wringing. Our institution's forays into revising the liberal education of our undergraduates has promoted the creation of an academic master plan that, while controversial in many respects, has nonetheless brought heretofore implicit issues out into the open. Hiring policies, academic advising, and the integrity of certain subject matters, for example, are currently being questioned on our campus.

(7) Awareness of capital's necessary and extensive role in liberal education must be acknowledged in order to be understood and constructively dealt with. Faculty need to understand how administrators go about making hiring decisions in some departments but not others, and how a department's contribution—perceived or real—is weighed. Administrators need to be aware that faculty have the intellectual and moral right to actively participate in discussions that direct the development of certain programs (i.e., curricula, centers for excellence) over others. A very contentious issue is the degree to which those responsible for academic programs and those responsible for financial resources are willing to allow each to effect the other's domain. Constructive engagement is critical here.

(8) Faculty and administrations must contend with market-driven issues that shape contemporary higher education. Attention must be directed to examining the appropriateness of programs that may be regarded as vocational (i.e., accounting, criminal justice)—are they adequate to the mission of liberal education? Similarly, strictly avocational programs may need to justify (perhaps solidify) their role in a liberal arts curriculum—are they involving or arcane? Agreement on priorities regarding both camps may be problematic, but airing of views is certainly possible.

(9) The structure of the academic program *vis a vis* majors needs to be reconsidered in light of any curricular renewal. Academic specialization has been perceived to result in "major creep," that is, an on-going encroachment of specialized courses upon general education offerings; broader views of the world are sacrificed in favor of narrower visions. In particular, college and university faculty need to remind themselves that undergraduate education must not be identical to graduate education in either form or content.

(10) Competition for and constraints surrounding monies in institutions of liberal education must be considered. Individual academic programs—departments, majors, institutional centers—advocate their own interests over those of liberal education. Indeed, as is readily apparent at our own and other institutions, no one—faculty member or administrator—is an advocate for liberal education per se. Pressing issues, such as student recruitment, tend to override

educational vision; after all, one cannot reasonably be expected to worry about promoting values of liberal education if the sponsoring institution is not going to make budget or survive in the long run.

Making the Implicit More Explicit

Our experience in our institution's one day seminar and the process of writing this paper leads us to conclude that even people of similar backgrounds can have widely divergent views on resolving dilemmas of liberal education. There is no one way to combat the effects of the implicit curriculum present in higher education. Rather, the ideal can only be a perennial process of deliberation. Faculty must be moved from the complacency of the implicit curriculum to re-evaluate not only the content of what they teach, but also the context within which knowledge is created and disseminated.

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A Student-Centered Pedagogy: Collaborative Learning, Assessment, and Retention

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In Moliere's Le Bourgeois Gentilhomme, M. Jourdain exclaims, "By my faith! For over forty years I've been speaking prose without knowing anything about it." He expresses gratitude to his philosophy master for informing him of this fact: "I am for all the world most obliged to you for informing me of this." Just as M. Jourdain never realized he had been speaking prose for more than forty years, faculty in colleges and universities traditionally have not thought of themselves as engaged in activities that we now characterize as retention. These activities include all programs that help students persist to the completion of their degree, particularly what happens in the classroom. However, unlike M. Jourdain, not all faculty would necessarily be pleased to learn that they are "doing retention," because they might consider retention to be inconsistent with the established values of the professoriate. They may express concern that assuming responsibility for retention means they will be forced to compromise their academic standards by "teaching down" to students or inflating grades. Such faculty tend to take a traditional approach to college teaching, where they "dispense knowledge" to students–usually through lectures–on a take it or leave it basis. However, we are beginning to recognize that when faculty employ a student-centered pedagogy, they are also doing retention. Like M. Jourdain, these faculty might be pleased to learn that teaching by means of a student-centered pedagogy makes the professor an agent of student retention "without knowing anything about it." In this paper, we will explore collaborative learning as an example of how alternative pedagogy improves the teaching and learning situation, while simultaneously enhancing retention and other desirable outcomes. We also consider the necessity for ongoing assessment of academic programs, with special emphasis on programs that experiment with new pedagogical techniques.

To test the general understanding of retention on the part of attendees at the SUNY New Paltz Fourth Annual Conference of the Institute for the Study of Post-Secondary Pedagogy, a short quiz was administered before our presentation (see Appendix A). The quiz results revealed that knowledge of retention, retention efforts, and the role of faculty in such efforts was limited, especially with respect to the importance of pedagogy. Respondents had a good knowledge of nationwide retention rates and the importance of retention efforts to students in their early years at college. However, quiz results confirmed that only about half the respondents considered pedagogy fundamental to student retention. There was little consistency in perceptions of who is responsible for retention from campus to campus. Most of the retention efforts described by attendees (orientation, advisement, tutoring, academic support, academic development centers) had little or nothing to do with classroom pedagogy. Indeed, when describing faculty attitudes toward retention at their institutions, attendees more often than not gave negative responses (aloof, other people's job, cynical or insouciant, beyond their control). A minority described faculty as positive, open, or supportive of student retention efforts. When asked for their own ideas for a retention program, only a minority focused on pedagogical solutions.

Merrimack College, like many colleges and universities today, is particularly concerned about the retention of students because of the declining numbers of high school graduates and the new federal requirements that post-secondary institutions publish their retention rates. Since 1992, the college has established a program to improve the retention of students. Pedagogical innovation lies at the heart of the program. For example, Merrimack's First Year Seminar Program and our College Writing course have been designed to actively engage students in learning through inquiry and conversation. We believe these experiences can provide the foundation for lifelong learning skills that will serve our students well (see DeCiccio & Walsh, 1993). As shown in Table 1, the retention of first year students into the sophomore year has increased by 10% since the introduction of the new pedagogy, following a two year decline in the retention of entering classes. Nationally recognized experts on student retention emphasize that retaining students is a campus-wide responsibility and that faculty in the classroom play the central role in this effort. Lee Noel (Noel, Levitz, Saluri, and associates, 1991) writes:

> I must dispel the myth that retention is the function of admissions or student services. First, enrollment is dependent upon satisfied students and alumni; they are, after all, an institution's best recruiters. This satisfaction is manufactured in classrooms by competent, caring faculty who believe their mission is to reach individual students and have a positive impact on their lives (p. 15).

Table 1. First Year Retention: Classes entering 1990-93

Year Entering as First-time Students	Percent Retained to Sophomore Year
1990	82%
1991	75%
1992	70%
1993	80%

More recently, Vincent Tinto (1993) of Syracuse University has indicated that the faculty role in the classroom must be the primary factor in a successful retention program, based on an important new theory of student retention that is substantiated by a growing body of knowledge:

> [This theory] is a view of college communities that allows for the necessary linking of learning and leaving and the very important role classroom experience plays in the process of student persistence. In this way, it is a model of educational communities that places the classroom at its very center. . . If we overlook the life of the classroom and the skills faculty bring to bear to engage students in that classroom, where shall we turn to for enhanced retention? (pp. 137, 210)

The work of Noel et al. (1991) and Tinto (1993) highlights the central role of faculty and the pedagogy they employ in the classroom for the success of student retention programs, regardless of other efforts the institution is making to retain students. The student-centered pedagogy being developed at Merrimack, with its emphasis on collaborative learning, is an example of the kind of classroom practice that leads to improved retention of students through greater involvement or engagement in learning.

Although pedagogical innovation lies at the heart of the student retention effort, we should emphasize that this is complemented by other efforts designed to help entering students persist at the college and successfully rise to the academic challenges Merrimack offers. The college's New Student Retention Plan, which was instituted in 1993, begins with a strong admission and financial aid effort that seeks to attract well-prepared students who are interested in a pedagogy of active learning. The new admission publications of the college describe Merrimack as a college "Where active learning is our rule of thumb." Another part of the program enlists the support of parents in the effort to help students become actively involved in learning. The plan makes academic support available to students to help them succeed in becoming active learners, especially those whose preparation for the new pedagogy is weak. Other plan components are designed to spread the word about retention across the campus and enlist especially the support of the Student Life administration, who have undertaken a complementary effort to engage students more actively in co-curricular learning. Student Life offers several scholarships to entering students who are particularly active in co-curricular activities in secondary school. The Retention Study Committee is charged with assessing the college's retention efforts and determining where they may be strengthened in the future.

In addition to being comprehensive (i.e., broad in scope and incorporating the efforts of many from across the college campus), the retention plan is also integrated. This integration derives from the fact that responsibility for the entire retention effort has been centralized in the academic area through the Office of the Dean of Studies. The Dean of Studies administers the First Year Seminar Program, supervises academic support services, coordinates retention efforts originating in Student Life, and chairs the Retention Study Committee. It is unusual to center a retention effort in the academic administration, but the college believes that if the faculty and the pedagogy they employ in the classroom are critical to student persistence, then it is important that the academic administration bear the major responsibility for retention efforts. The Dean of the Faculty of Liberal Arts also plays a major role by taking responsibility for faculty development activities associated with the First Year Seminar. While we cannot determine how much each of the components of the retention plan contributed to the 10% improvement observed for the class entering in 1993, the retention literature suggests that the new student-centered pedagogy may be a particularly important factor.

Having established the critical value of pedagogy to students and their persistence at college, we now turn our attention to collaborative learning, an approach that plays a central role in our efforts to foster a more student-centered classroom environment. Collaborative learning is relevant across a wide range of courses; however, the discussion that follows focuses primarily on writing-intensive courses.

At the end of Robert Frost's "Tuft of Flowers," we are told that men and women work together whether they work together or apart. What Frost wrote is precisely what we at Merrimack mean when we talk about collaborative learning. What people normally think of as reflective thought is really something that is related to social conversation. We would argue that it is virtually impossible to separate human activity from conversation. At Merrimack, we view writing as a form of internalized conversation which has been made externalized. Thus, collaborative learning provides a social context in which students can come together in First Year Seminars, in College Writing, and in numerous other courses throughout the curriculum to practice conversation in speaking and writing. Collaborative learning is an important tool for introducing students to the process by which men and women in society create knowledge and practice the kinds of conversation that human beings value. Indeed, collaborative learning in the classroom can lead to more effective writing; collaborative learning throughout the general education curriculum can perpetuate the kind of "learning community" implied by Frost and advocated in the higher education literature (e.g., Tinto, 1993).

Teachers and students engaged in a collaborative approach to writing view their relationship differently. As George Hillocks (1984) has asserted, a collaborative approach to writing places "teacher and student more nearly in balance, with the teacher planning activities and selecting materials through which students interact with each other to generate ideas and learn identifiable writing skills" (p. 145). Students who are learning to write collaboratively discover that, to become effective writers, they have to be as responsible for their learning as their teachers. In accepting a collaborative perspective, teachers usually resist the temptation to trot out the emblems of their traditional authority: the vocabulary, the degrees, the books, and so forth. The teacher's vocabulary, degrees, and books should not be signs of traditional authority, but examples of the teacher's disciplinary community. We are discovering that when teachers and students see themselves as engaged in the collaborative pursuit of knowledge and learning, the nature of their interaction changes. They recognize that rather than being simply "teacher" and "student," they are both writers attempting to construct knowledge and truth. Even though still inexperienced, the student will begin to understand the discipline of which he or she will become a part. "This alternative view," writes Kenneth Bruffee (1984), "doesn't eliminate the tension between students and teachers. It modifies that tension, so it can become a productive educational force, rather than a debilitating force leading to paralyzing dependency or merely prodigal rebellion. The participants in the transaction, according to this view, are no longer frozen in traditional postures. The inevitable authority relationship between them, and hence issues pertaining to the authority of knowledge, become negotiable" (p. 20). Ultimately, in the collaborative writing environment, the teacher-student relationship becomes more equitable.

In affirming what Bruffee says, a first principle for teachers at Merrimack who emphasize writing is to consider encouraging students to engage in a dialectical process between teacher and student and between student and student, a process that leans heavily on conversation about aims, ideas, and methods, rather than fostering the notion that all writers work in isolation, going through the solitary process of thinking about their subject and then writing about it. To generate such conversation, these teachers encourage students to engage in problem-solving activities that depend on mutual cooperation and interaction. Regardless of the students' abilities, the problems teachers pose lead developing writers through all the stages of the composing process, from the preparation of a text to its verification. In response to the tasks teachers assign, students collaborate with each other in order to generate the kind of discourse that will fit the situation. The teachers' task is to elicit from the students the kind of talk about writing that customarily occurs in the larger community of literate writers. In order to ensure productive conversation, these teachers provide opportunities in the course plans for students to engage in a variety of verbal activities. For example, they might ask students to read aloud the early and final drafts of their texts. In this way, students get immediate feedback from an audience and learn how to interact dialectically with another. Teachers also ask students to work in pairs to generate material and, perhaps, even to co-author a text based on the results of their collaboration. In so doing, they demonstrate that, more often than not, two (or more) heads are better than one. Teachers ask students to practice peer criticism and then to discuss their critiques with one another (see Appendix B). In this way, they reinforce the idea that effective discourse results from collaborative learning, and that texts change with time and improve with revision. To help students acquire identity within the group, teachers may arrange small groups of students and charge them with solving a problem; the groups would then report their solution to the class as a whole. To highlight the collaborative nature of writing, these teachers typically rearrange the classroom to take the shape of a writing studio or workshop. By urging collaborative learning in the classroom, teachers provide support groups that "students can rely on as they go through the risky process of taking on authority as writers and as critical readers [and] a measure of security as students substitute confidence in their own authority for dependence on the teacher's authority" (Bruffee, 1985, p. 13).

A second principle of teachers who emphasize writing at Merrimack is to reevaluate the nature and kinds of writing assignments they prepare for their students. For example, teachers have reconsidered the effectiveness of assigning the one-hour, in-class essay. Although we acknowledge that some professional writers can fulfill an assignment individually in a short time period, we have found that many profit by collaborating with others and by having the leisure to develop their ideas. We have found that developing assignments that encourage writers to talk, write, and read as they proceed through a text (collecting information, focusing, designing, ordering, drafting, clarifying) is a more consistent application for teachers who wish to practice a social, collaborative rhetoric. Teachers also ask students to write on issues that have social impact by generating assignments that engage them in the most important problems of the real world on subjects about which students have personal opinions, for audiences capable of being moved by a rhetorical piece of discourse, and with constraints that approximate real-world conditions. These teachers may even encourage students to engage in conversations with appropriate authorities; they suggest that students attend relevant lectures in other courses as well as in the civic community. By encouraging these kinds of activities, teachers demonstrate the importance of the dialectical process in generating consequential discourse.

A third principle espoused by teachers who emphasize writing at Merrimack is to consider ways in which they might redefine their roles. Rather than always thinking of themselves as lecturers whose primary responsibility is to impart information, they now think of themselves as facilitators, co-workers, enablers, resources, and even referees. Like publishers or editors who facilitate the production of their own texts, teachers occasionally use one-on-one conferences to facilitate the student's process of solving a writing problem. On the other hand, they might adopt the role of co-workers, actually exemplifying the difficulties of the composing process by practicing their craft, by writing in the classroom along with their students. Teachers also take on the role of enablers who are actively seeking to initiate their students into the larger community of literate writers. For example, they set up situations to enable students to publish their texts for the entire institutional community to read, and thereby give visible proof of the students' acculturation into the community of literate writers. In adopting a referee's role, teachers direct the activities of their students toward an understanding of community-tested conventions. Their role as referees does not preclude teachers from being resources for students who are attempting to understand the values of the literate community. They might, for example, bring to the classroom necessary materials for students to read and to study as they try to complete an assignment; they might also set up appointments for their students to meet with peer tutors and writing center personnel.

Yet one more principle of teachers who emphasize writing at Merrimack is to consider alternate ways of evaluating the writing of their students. For example, in addition to grading finished texts produced in response to formal assignments, these teachers evaluate all of the drafts for those texts, the descriptive outlines, the evaluative and substantive critiques students prepare for one another as they develop the final texts, readings of the early and final versions of these texts, and the collaborative exercises that prepare students for writing such texts. Instead of grading papers according to some quantifiable scale, often arbitrarily devised, these teachers consider the students' oral performances and written peer critiques. By carefully examining and evaluating the criticisms students offer one another, teachers are able to judge the students' texts as solutions to the most fundamental problems of writing, evaluating students on the basis of how well they articulated their purpose for writing, commenting on how well students attended to the needs of their audience, and measuring the choices in language students made to do both. All of this implies that students should have a more active role in determining their grades. Obviously, in a collaborative approach to writing, this is an important implication. Teacher evaluation demonstrates to students that writing is a process that improves over time and through the help of others.

The most important implications of collaborative learning in the classroom emphasizing writing involve the principle by which we at Merrimack elicit student involvement. First, students must focus attentively on what their peers say (immediately, through face-to-face conversation, and distantly, through conversation displaced into writing) in response to the problems prepared by the teacher. (In fact, our students are asked to prepare Acknowledgments Pages for their papers to credit all those who contributed to the finished product, just as professional writers do.) Instead of being content to be mere receptacles into which teachers deposit knowledge, students at Merrimack have had to take a more active role in determining their learning. They pay greater attention to how they and their peers make judgments about writing and determine a course of action for producing discourse. In so doing, they come to understand that learning how to write depends largely on the changes in the kinds of relationships that occur among those people with whom they are writing. As participants in a collaborative learning context, students have become more self-conscious about the processes of internalization, identification, and acculturation:

> Students . . . learn first to vest authority and trust tentatively and for short periods in the members of small, transitional working groups; then, more confidently, in the larger community that constitutes the class; and, finally, in themselves as individuals as they internalize the process and the values of the newly formed community of writers. (Bruffee, 1985, p. 13)

Students at Merrimack have become tactful and responsible; they have begun to listen more attentively and responsively than they have hitherto; they have learned to converse with one another helpfully, giving and accepting constructive criticism; they have accepted emotional responses (especially when reading their work aloud); and they have learned how to avoid destructive confrontations with different personalities. In the collaborative writing environment, students are learning that their developing texts are vitally important, not only because they are the products that will be evaluated, but also because they provide the key–symbolized in the language they contain– for entering the larger community of literate writers. Perhaps the most significant implication is that, in Merrimack's collaborative learning environment, students are becoming empowered, recognizing that they can be participants of the ongoing conversation of humankind.

In most social situations, two or more people work together to solve a problem, construct a house, build an automobile, make a movie, create meaning, and so forth. Yet many teachers stubbornly hold to the view that writing is a solitary act in which meaning is privately constructed by individuals working apart from others. Teachers who believe in collaborative learning also believe that writing is the product, not of the individual, but of social interaction. These teachers would encourage group work on invention, arrangement, style, and revision. At Merrimack, faculty development efforts include collaborative learning strategies that make productivity possible in the practices discussed above. The end result of such efforts is a community working together to fulfill its educational goals while carrying on the conversation of humankind.

In the first part of this paper, we discussed the role that the faculty and the pedagogical approach they adopt in their classrooms play in important academic outcomes such as retention. In the next section, we discussed an active learning model for improving students writing skills. Now we turn our attention to the role that assessment can play in the development of an effective academic program. All too often, when we talk about assessment, we tend to think about something that we do at the end of the process to answer one very broad question: Did this program work? In reality, good assessment is an ongoing, iterative process that can–and should– occur at multiple, complementary levels (Light, 1990). Our experiences with the First Year Seminar illustrate this point.

In the spring of 1992, Merrimack College's Academic Planning Committee issued a long-range report that urged a rededication to the quality of the student's academic experience and to the pursuit of teaching excellence. The First Year Seminar Program was designed with these twin goals in mind. While there is no limitation on course content per se, each seminar is expected to meet several criteria. These include an emphasis on writing; attention to library and investigative skills; utilization of discussion, dialogue and conversation as teaching methodologies; an emphasis on critical thinking; and a course topic connected to some fundamental question regarding civilization considered in all its breadth, diversity and multiple aspects. We determined that it would be valuable to run a pilot program before implementing the full program. Subsequently, five seminars incorporating these principles were offered to second-semester freshmen on an elective basis.

The value of the student-centered active learning model, which is the central organizing principle of both the First Year Seminar and College Writing, has been well documented. There is a formidable body of research in both the higher education and educational psychology literatures linking this approach to student satisfaction, improved retention, enhanced critical thinking skills, and other benefits (see Astin, 1985; Barefoot, 1993; Light, 1990, 1992; McKeachie, 1990; Tinto, 1993 for reviews). Thus, the assessment of the pilot program did not focus primarily on whether this type of approach would work; the experience of other institutions clearly indicates that it can. Rather, we were guided by the more particular goal of determining how an active learning program could be made as effective as possible at Merrimack College. That is, we planned to use our assessment data to develop a high quality academic program.

Three data sources formed the basis of the assessment of the pilot program. These included mid-term focus groups, results obtained with a specially designed course evaluation form, and the instructors' summary statements. Consistent with the goals articulated earlier, our data-gathering efforts enabled us to explore the perceptions and experiences of both students and faculty. These assessment techniques were later adapted for assessment of the programs first full year.

At mid-term, a member of the assessment team went to each of the five pilot seminars to facilitate a focus group discussion about the seminar experience. The focus groups provided interesting insights into the mid-term reactions of participants in the pilot program. Students in all five courses generally held positive attitudes toward the seminar experience. They correctly perceived the role of the instructor in this type of course as one of facilitator rather than authority figure, and were mostly pleased with the nature of student-faculty interaction. Students indicated that they appreciated having the opportunity to provide input into course decisions. In general, they found the seminar experience to be a refreshing change of pace from their other courses. All of the instructors had incorporated journal writing into their seminars. Student reactions to this technique were somewhat mixed. Given that a writing-to-learn approach plays a central role in most active learning models, it was clear that this should be a focal point of professional development experiences for seminar instructors. Students indicated that they had achieved a degree of comfort participating in class discussions; but it is important to note that the majority of students felt that there was little carryover from the seminar experience to their other courses. One reasonable (and cautionary) conclusion was that if the seminars remained an isolated experience in these students' education, the impact of the First Year Seminar Program would be minimal. Thus, the focus groups were a valuable source of formative data for the five instructors, but they also had implications for the nascent First Year Seminar Program and, indeed, for the academic program as a whole.

The sheer number of seminars offered during the 1993-94 academic year (25 topics presented in 33 sections over the course of two semesters) made the focus group methodology unfeasible for assessment of the program's first full year. Instead, each faculty member was encouraged to use the 12 focus group questions as the starting point for their own mid-term assessments. Primary responsibility for collecting and analyzing mid-term data was thus left to the individual instructors. This approach is consistent with the general expectation that each instructor would engage in ongoing assessment of his or her seminar as discussed by Angelo & Cross (1993).

The assessment team developed a special course evaluation form ("Reflections on the First Year Seminar") that was administered to students at the end of the semester. Unlike traditional course evaluation forms, this instrument focuses on the unique aspects of the seminar experience rather than the instructors' performance per se. Twenty objective items measured student response to the seminar in terms of its impact on their academic skills, the role of the professor, and their overall reaction. Ratings were made on a set of 5-point Likert-type scales ranging from strongly disagree (0) to strongly agree (4). Table 2 summarizes results for the pilot program and for the first two semesters of the full program.

The results are generally positive and consistent across the three semesters, but for the purposes of this paper a few findings are worth highlighting. First, participants in the pilot program rated familiarity with library resources lower than all other skills-related items. Consequently, library tours were instituted

Table 2. Mean Ratings for Pilot Program and Two Semesters of First Year Seminar Program

Part I. The Seminar Experience[1]

This course has helped me to...	Pilot Mean (N=56)	Fall '93 (N=194)	Sp '94 (N=199)
become aware of different methods of inquiry/research	2.6	2.9	2.9
become more familiar with library resources	2.0	2.9	2.8
improve my ability to read and understand materials from sources other than textbooks	2.9	2.9	2.7
converse more easily in class	3.3	3.2	3.1
be more comfortable doing oral presentations	2.8	2.8	2.8
write better papers and/or reports	2.8	2.8	2.8
work more effectively in groups	2.8	2.9	2.8
think more analytically	2.8	3.0	2.8
formulate critical questions	2.8	2.9	2.7
appreciate different perspectives on an issue	3.0	3.3	3.1

II. The Professor's Role[1]

The professor...

clearly explained the nature of this course	2.8	3.3	3.3
provided students with ample opportunity for input into decisions regarding the course	3.6	3.7	3.4
facilitated good class discussion	3.1	3.5	3.4
offered sufficient guidance regarding how to complete various course tasks	3.1	3.3	3.2
discussed strategies for doing research in this topic area	2.9	3.3	3.2

III. Overall Reactions[1]			
This course has been a valuable learning experience for me.	3.0	3.2	3.0
If I had it to do over again, I would definitely take this course.	2.7	3.0	2.8
I would recommend this course to others	2.9	3.2	3.0
I would definitely take another course with this professor	2.9	3.4	3.2
I believe the First Year Seminar Program helps Merrimack students develop good academic skills.	NA	3.1	2.8
IV. How demanding was this course?[2]	NA	4.1	4.2

[1] Based on a 5-point scale ranging from 0 (strongly disagree) to 4 (strongly agree).

[2] Based on a 7-point scale ranging from 1 (much less demanding) to 7 (much more demanding).

during the programs first full year and instructors were encouraged to emphasize library research. There was a marked improvement in this rating the following year. In terms of the professor's role, participants in the pilot study rated "clearly explained the nature of this course" lower than all other items. As a result of the pilot program and subsequent faculty development experiences, instructors were better able to articulate the nature of the course. Thus, there was a marked improvement in this area during the next two semesters. The results also showed substantial progress in two other aspects of professor's role: "facilitated good class discussion" and "discussed strategies for doing research in this topic area."

Programs that depart from the traditional lecture format are often viewed with skepticism by some members of the faculty and administration. In particular, the concern is often raised that courses like the First Year Seminar are less rigorous than more traditional offerings. The course evaluation form used in the program's first full year included an item that attempted to address this issue. Students were asked to rate the seminar in terms of how demanding it was compared to other courses they were taking. The results showed that, from the students' perspective, there was little cause for this concern. Approximately three-quarters of the students reported that the seminar was at least as demanding as their other courses.

The data sources discussed thus far have been entirely student based. Clearly, the assessment of the pilot program would be incomplete without faculty perspectives on the seminar. So, the assessment team developed "The Instructor's Summary Statement," a set of 10 open-ended questions that provides a framework for the instructor's personal analysis of the experience. Seven of the 10 questions focus on perceptions of the seminar as an effective learning experience; three address faculty development issues. Despite frustrations with some aspects of the course, the seminar was generally viewed as an important developmental experience for both students and faculty. While the First Year Seminar Program was designed to provide students with a formative educational experience, it was also meant to be a vehicle for fostering excellence in teaching. A theme that emerged in the summary statements with great frequency –and occasional passion–during both the pilot program and the program's first full year is how much participating faculty members valued having an opportunity to talk with colleagues about teaching. Beyond providing data for the assessment, these statements serve as an important resource for seminar instructors and for other faculty members interested in exploring alternative pedagogical approaches.

In conclusion, our experience with the First Year Seminar Program demonstrates the value of assessment as a program development tool. Several lessons may be taken from our experience. First, whenever possible run a pilot program before implementing a new program. Second, think systemically about program goals, considering the role and possible impact on both students and faculty. Finally, assessment is not an endpoint but rather a tool for ongoing, organic program development.

"As civilized human beings," writes Michael Oakeshott (1962), "we are the inheritors, neither of an inquiry about ourselves and the world, nor of an accumulating body of information, but of a conversation, begun in the primeval forests and extended and made more articulate in the course of centuries. It is a conversation which goes on both in public and within each of ourselves..." (p. 199). At Merrimack College, conversation is the foundation upon which we have erected our efforts at enhancing retention, developing programs, and carrying out assessment. We converse with one another about how to build community and about how to keep students actively involved in that construction. We discuss, debate, and write in our classrooms in order to become active participants in the conversation that Oakeshott perceives to be so civilizing. We also describe and critique what we are doing (inside and outside the classroom) in order to guarantee that complacency doesn't impede our momentum. In the end, at Merrimack, "it is this conversation which . . . gives place and character to every human activity and utterance" (Oakeshott, 1962, p. 199).

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Appendix A

Student Retention 101 Pop Quiz

1. Nationwide, what percentage of college students stays and graduates within 4-5 years?

   a. 70% c. 50 %
   b. 60% d. under 50%

2. Which of the following plays the essential role in retaining students at a college or university?

   a. academic advisement c. academic support services
   b. co-curricular activities & student services d. none of the above

3. If a college is to succeed at retaining more students to graduation, it may be necessary to:

   a. tighten admissions standards c. increase student activities
   b. inflate grades d. all of the above

4. In which year of college is student attrition the greatest?

   a. first year c. junior year
   b. sophomore year d. senior year

5. Through which role(s) can faculty be most effective in helping retain students to graduation?

   a. teaching well and upholding academic standards
   b. tutoring individual students and giving extra help
   c. greater involvement in academic advisement of students
   d. both b & c

6. What percentage of students at your institution stay and graduate within 4 or 5 years?

7. On your campus, who holds the primary responsibility for retaining students?

8. Identify some specific efforts your institution makes to retain its students?

9. Describe the attitude of your faculty toward the institution's student retention effort.

10. If you were in charge of building a program to retain a greater proportion of your students, where would you focus your principal effort?

Appendix B

"Hello Ms. Foley, yes it's me. I'm fine thank you, how are you?"

As she rambled on [1] all I could think of was how weird it was that this woman who turned somersaults in my stomach and caused me to have nightmares was talking to me as though I was an equal. I think it was a good thing that we saw each other this past summer. As we continued talking, I came to the realization that we were communicating as adults.[2] The queasy feelings I used to get were gone; it was as though they never existed to begin with. As I stepped outside into the fresh air and walked to my car, I was immersed in feelings of intense relief. It was as though a horrible dark cloud from my past was lifted to let the light shine through for my future. I feel now that I've found relief and freedom from the unpleasant experiences that still haunted me until that afternoon in August when they were put to rest.[3]

[1] What did she ramble on about? Just curious!

[2] Why do you think that this woman, the same one you could not stand the sight of, is so different now?

[3] Did you by chance tell your brother about this? He's a big part of the beginning of the paper; how about the end?

NB–The conclusion from a paper draft is reprinted with the consent of Ms. Denise D'Eon, a student in Introduction to Composition Studies (Fall, 1994). The written comments are reprinted with the consent of Ms. Debbie Brooks, Denise's classmate.

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Reconfiguring Knowledge Relations: A Department's Self-Study Project

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During the 1993 Fall semester the Department of Specialized Services in Education of Lehman College initiated a unique and innovative self-study project. Members of the faculty in keeping with the statement of President Fernandez that "the role of colleges and universities in the future must take an ever broader look at the multiple cultures, multiple voices, and multiple realities that living in the 21st century will involve," selected and distributed readings exploring contemporary issues of social theory and educational practice from current journals and monographs. These diverse materials provided the focus for weekly discussion and critique, and the basis for reconceptualizing programs.

The Department of Specialized Service's Self Study Project has been distinctive in the multiplicity of processes, readings and initiatives it has generated. Since the Fall of 1993 members of the department have been actively engaged in drawing connections and potential educational incentives from an extremely diverse and often challenging variety of contemporary readings and critiques. The Self Study initiative sought a renewed sense of professional cohesion and departmental coalescence. It was started at a propitious time with three new full-time members joining the faculty with the explicit intent of finding means by which to make effective both interdepartmental and intradepartmental linkages and relations. This project has also been distinctive in relation to other collaborative faculty efforts (Miller, 1990) in its attempt to balance tradition and innovation in our investigation of key issues concerning our academic and professional commitments.

The Self-Study sessions fostered an evolving awareness among the faculty of each individual's pedagogical orientation, including the specificities of each of our theoretical, methodological and research interests. In the interest of generating critical reflection upon the dynamics of educational theory and practice, our self-study project provided a forum, which included participation from the College President, the Dean of Education, the Chair of Elementary Education and other administrative personnel, for thoughtful debate and discussion. The process of reflection on the premises of our professional responsibilities to our students, as well as the diverse communities they represent, offered a context in which, in Nancy Harstock's (1987) apt phrase, we could "read out the epistemologies of our various practices."

This project catalyzed reflective thinking amongst faculty regarding our purposes, privileges and responsibilities, in the perspective given by Giroux (1988), as 'engaged intellectuals.' We believe that the experience of assessing the guiding premises and implicit values that comprise the ideological compass in which we have been oriented as educators, researchers, theorists and practitioners, will continue to spawn critical and creative approaches to the urgent issues confronting us. The self-study group has adopted the working perspective that our work as educators in the fullest sense requires of us to come to terms with both a critique of existing institutional restraints, at the structural levels of higher education and in primary and secondary schools, as well as the capacity to articulate a 'language of possibility' that is salient and inclusive of the students and communities we attempt to serve.

Among the initiatives faculty members have collectively or individually engaged in as a direct outcome of the self-study process are:

- The design of a new departmental course in contemporary issues in urban education.

- The writing of innovative grant proposals, including submissions for the establishment of an interdisciplinary undergraduate minor in Literacy Studies based on oral history projects to be sponsored by the Graduate Reading Program.

- The design of means by which the Department can strengthen connections to community based organizations through the provision of joint programs including adult education, counseling and professional consultation.

Individual faculty have also attested to significant changes in their teaching and professional identities. These have been remarked as shifts in pedagogic form, including altering classroom relations to emphasize dialogic interaction and the validation of experiential sources of knowledge and value. Curricula changes have also been augmented to include explicitly political dimensions of content areas and course work. Two faculty members have reported their increased acknowledgment and awareness of the political and sociocultural dynamics implicit in their syllabi. One faculty member has reflected on a critical intellectual and academic reorientation from a cognitive-based model to a cultural context paradigm.

In order to fully understand the goals of the Department of Specialized Services in Education in relation to the college's mission and the value of the

Self-Study process, it is necessary to situate the Department and its programs in context.

Lehman College was established as an independent unit of The City University of New York on July 1, 1968, following a decision by the University's Board of Trustees to create a comprehensive senior college in the Bronx with its own faculty, curriculum, and administration. The College took over the campus that, since 1931, had served as the Bronx branch of Hunter College, known as Hunter-in-the-Bronx.

The Department of Specialized Services in Education was one of the three departments created when the Department of Education of Lehman College was divided into three separate departments in 1975. At the time of this division two competing paradigms, each based on different assumptions about the abilities of faculty to work cooperatively were being considered. The first was that departments should be self-contained units built around certification areas. It assumed that faculty could or would not work effectively across the disciplines to implement programs. The second, based on the assumption that faculty could and would work cross-departmentally, urged that departments be built around specialty areas. In its deliberation the then Department of Education chose to reorganize itself around certification areas: the Department of Early Childhood and Elementary Education leading to certification of Early Childhood and Elementary School teachers; Secondary and Continuing Education leading to certification of Secondary School teachers in a variety of content areas; and the Department of Specialized Services in Education with certification programs for School Guidance Counselors, Teachers of Reading, N-12, and Teachers of Special Education, N-12.

Since its inception, the Department of Specialized Services in Education has provided an academic and professional forum representing the multiple and diverse voices of an urban campus. The self-study project was intended to provide a means to channel these multiple voices, register their differences, and discover their commonalities. This process lies at the heart of the idea of inventing community and articulating possibility.

Reconfiguring knowledge relations

Among the themes and prospects that have emerged through the self-study process are the following:

- the need to situate the institutional authority of the department and the ambiguities of power distribution in classrooms at all levels of education.

- how contemporary humanist pedagogical practice is often simultaneously and contradictorily complicit with dominant paradigms and forms of privilege and inequality.

- the nature of symbolic and 'cultural capital,' including the formation of the structures into which teachers, as well as students, are enculturated.

- the creation of teaching culture centers grounded in the historical scrutiny of how 'pedagogies of possibility' might be realized and in which supportive, collaborative structures based on reflective intellectual, dialogic exchange can be initiated.

- a questioning of how processes of socialization to despair, alienation, and survival in the 'demilitarized zones' of urban schools, has become a fact of the working life of many teachers functioning in massively overburdened public schools.

- a need for confronting the margins of our disciplinary discourses through a working collective inquiry in both teaching and research, theory and practice, school and community, to bring into dialogic relation some of the traditional dichotomies and oppositions between the private and public spheres in the everyday lives of educators and students.

- the necessity for reconfiguring the authority and directives of teachers to provide genuine opportunities for contributions by students whose divergent voices have traditionally been displaced and silenced; to resituate the subjectivity and the production of meaning within classrooms through active interventions into the nature and process of pedagogical encounters; to catalyze the expression of often contradictory forms of knowledge and power represented by the multiple levels of teacher and student subjectivity, including differences in gender, race, class and sexual orientation.

- a critique of positivist norms, criteria, assessment and other instrumentalities, which cripple the expressive elements of diversity, development and difference within educational theory and practice.

- to investigate how research methods establish and encourage degrees of specific social relations, ranged within a spectrum between relations of production and consumption to collaborative and agentive community inquiry; how research, whether neo-positivist, or behaviorist is always perspectival and positioned in ideological value and intentionality; how the recent development of various and divergent reflexive practices, whether termed feminist, critical, liberatory, poststructuralist, or neomarxist, can develop explicit research programs that work in the interests of providing both educational parity and social justice for a rapidly changing, multicultural citizenry.

- the need for research and inquiry that sponsors collaboration and collusion between teachers, researchers, students and contexts of inquiry which may serve in a praxis that draws upon the depths and differences of multiple forms of cultural memory and their regeneration.
- an examination of the unequal production, performance and distribution of genres and forms of knowing, including narrative, autobiographical, rhetorical, dramatic and positional expression.
- the risks and possibilities of opening our classes to one another, providing space for collaborative inquiry, teaching and criticism in order to maintain momentum in critical engagement, interpretive and reflective practices.

At this critical juncture, the self-study process has affected us as a department comprised of individuals with discrete forms of expertise. It has provided a context for us to discover and disclose our professional, personal and academic commitments, including the ideological, value anchored bases of our research and scholarship that are not always commensurate with one another. It has provided a place for us to articulate differences in how we teach, in our sense of our purposes and how we conceive of our roles as change agents. It has been a forum for collective reflection in which we have come to question our own and each others' engagement as teachers and researchers - and through which it became apparent that our discrete histories and specialist training divided us often through technicist, depersonalizing, positivist and postpositivist methods of objectification.

These differences in our department have been a generative source and reservoir as we realized that there is no one, fixed foundation shared by all members of the faculty. Adopting what Kincheloe (1993) calls a 'post formal, critical constructivist' position, we accept the perception that there is none that would give the freedom to think and reconfigure knowledge. As teachers of teachers and other professionals, we have been granted no privilege, no claim to truth, or ground for knowledge.

Relational Knowledge

The process of collective inquiry has generated a sense of responsibility to become evident: to find salutary ways for the expression and generation of distinctive forms of what can be termed relational knowledge. These include the compelling varieties of materially different forms of socialization, and pragmatic knowledge expressed through discourse community exchange with others in diversely gendered, ethnic, racial and class contexts. Relational knowledge is a critical concept for the project of rethinking the role and value of our commitments as educators.

Relational knowledges are constitutive of relational selves. They are forms of knowing and acting that are socially and culturally positioned in and through processes of formulating the values implicit in differing ways of knowing and inquiring. As students struggle with their identity and 'sense of belonging' within institutions, they develop distinct often discrete literacies to deal 'relationally' with the divergent languages and discourses of home, community and institutions, including schools, in developing their sense of possibilities as knowers.

The notion of relational knowledge has also opened the question of beginning the difficult but potentially transformative task of fostering emergent teaching and classroom cultures. We have begun to imagine the structure and systems of knowledge and power inscribed in future teaching culture centers. These can be envisioned as cultures and local communities grounded in the generation of 'pedagogies of possibility' and in which supportive, collaborative structures based on reflective intellectual, dialogic exchange can be initiated.

The premises guiding our commitment to reconfiguring knowledge through the development of relational knowledges and the selves that generate them is congruent with tenets of Dewey's philosophy (Dewey 1929; 1938). Dewey's concerted emphasis on the articulation of possibilities and conceptual linkages deriving from everyday 'situations' bridge contemporary, postmodern pedagogical concerns for anti-essentialist expressions of pluralism and difference. Our perspective has sharpened to indicate how a pedagogical practice committed to the irreducible differences and possibilities of change in subjects' relations to the world, and one that is grounded in reflexive inquiry, revisioning and critique, sustains a non-foundational ethics and justice compatible with the ameliorative tenets of pragmatism.

The logic of experience for Dewey is capacious enough to include all manner and vagaries of human cultural conflict and change, articulating a worldview that emerges from the contingent and local sociocultural forces and strivings of specific 'situations.' Arguing against 'apart thought' Dewey wished to ground ontological claims in his logic of experience, rather than the reverse, as found in traditional scientific and formalist analyses which derived ontology from forms of logic detached from the currents and conditions of human cultural experience (Sleeper, 1986). The contextual nature of knowledge as transactional in nature, mutually constitutive and transformative for communicative agents, granted

Dewey a naturalist basis for reclaiming the purposes of philosophical and social inquiry, and the indissolubility of knowledge and specific kinds of pedagogical and intersubjective experiences, brought together to ameliorate and expand human possibility.

The ethical commitments of critical praxis are clearly not neutral. Critical pragmatism is action in the specific domains of power that suffuse and constitute subjectivity. The materiality of power, an issue in part derived from Foucault and his critics, is of decisive importance in specifying the conditions under which pedagogical practices are understood to operate and the relational matrix in which theories are embedded. They are not equivocal with regard to forms of tyranny and oppression.

In our own work we have begun to scrutinize how our own professional commitments are always positional. Coming to awareness of our positionality and the relational nature of our work allows us to reflect on our influences on student participation and learning. Therefore, we have questioned the nature of our own power in classroom exchanges amid the diversity of voices of members of divergent linguistic, ethnic, racial and gendered discourse communities.

The critical construction and interpretation of experience in which we have been and are engaged envelopes the cultures of teachers and the communities their students represent. We have come to adopt the view that neutrality and objectification as research and teaching premises are myths perpetuated by forms of institutional power that preserve their legitimacy through a denial of the very existence of contesting claims to power and privilege in education. This has required us to situate the institutional authority of our department and the ambiguities of power distributed in classrooms at all levels of education.

We have been involved in a process of documenting the reconfiguring of our relation to and uses of knowledge as forms of material power. It is a reflexive history of educators in transition, it is a history grown plural. Interpreted through reflection, emerging from and in difference, it is genealogical in Foucault's (1984) sense, deriving out of the convergence of wills to power and knowledge in disciplinary realms, our private, sanctioned academic trusts. We have not intended to chart a linear developmental course to resolve our divergent practices and interpretations.

Our self-study has provided a language for us to engage theory, our implicit working premises regarding practice, and our uses and practice of theory. This project has given us place, marking our ground in relation to our students, our own teachers, and to situate our own histories and training as partial narratives.

This situating of the power we represent as educators is a self-conscious process in which we come to know the multiple roles we play. As partial narratives, our own forms of expertise are contributions, interventions in dialogue, rather than fixed points toward which students navigate their own professional studies. As situated agents of partial narratives, we realize there are only margins where no center or truth value could claim authority or reference, but out of which relations of knowledge will converge in a writing of the future.

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Assessment of Mathematical Problem Solving: Strategies for Teachers

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Assessment occurs at the intersection of the important mathematics that is taught with how it is taught, what is learned, and how it is learned. It is a dynamic process that continuously yields information about student progress toward the achievement of mathematical power. When the information gathered is consistent with learning goals and is used appropriately to inform teaching, it can enhance learning as well as document it. (NCTM, 1993, p. 5)

Introduction

When over 20,000 mathematics teachers convened in Boston for four days in April to attend the NCTM annual convention, they had the opportunity to participate in nearly 100 presentations and workshops related to mathematics assessment. The prevalence of these sessions underscores the important role of assessment in efforts to reform the curriculum of school mathematics. At all the assessment sessions that we attended, teachers filled the rooms to capacity and were highly attentive to discussions about new ways to pose mathematical questions and varied techniques for assessing students' mathematical knowledge. Conference organizers were providing one avenue for practicing teachers to learn about alternatives to traditional testing. Our efforts at SUNY New Paltz have been in a similar direction, to participate in teachers' continued professional development by making new ideas in mathematics education accessible to current school teachers.

In the fall of 1995, the School of Education at SUNY New Paltz will offer a new graduate course for elementary teachers and secondary teachers of mathematics called Mathematics Assessment: K-12. This course is a collaborative effort of the Department of Secondary Education and the Department of Mathematics and Computer Science and will be co-taught by instructors from these two departments. We would like to describe the development of this course and how it relates to current reform efforts in mathematics education, the proposed revision of the existing New York State testing program, and results from an earlier pilot study that we conducted with preservice teachers.

The Reform of School Mathematics

The *Curriculum and Evaluation Standards for School Mathematics* (1989) has been accepted by administrators and teachers as the framework for the revision of school mathematics. This document provides a new vision of mathematical literacy and clear direction for the development of new curricula and instructional strategies. The *Standards* specifies five general goals for all students: to value mathematics, to become confident in the ability to do mathematics, to become mathematical problem solvers, and to learn to communicate and to reason mathematically. The focus of instruction shifts from the passive acquisition of facts and algorithms to the application of ideas to investigations and complex problem solving.

In the same spirit, the National Research Council (1989) offered the following goals for classroom instruction:

- Encourage students to explore mathematical ideas and concepts.
- Help students verbalize their mathematical ideas.
- Show students that many mathematical questions have more than one right answer.
- Provide evidence that mathematics is alive and exciting.
- Use experiential learning to teach students the importance of careful reasoning and disciplined understanding.
- Build confidence in all students that they can learn mathematics (p.81).

Within the new curriculum, the concept of basic skills in mathematics has been extended well beyond pencil-and-paper calculations. The new emphases are on conceptual understanding and on identifying and using effective strategies for the solution of complex or nonroutine problems. For example, Zarinnia & Romberg (1992) described the process of learning mathematics through problem solving:

> Students retain best the mathematics that they learn through construction and experience. . . . As they reason through problem situations, students develop the habit of making and evaluating conjectures, and of constructing, following, and judging valid arguments. In the process, they deduce and induce, apply spatial, proportional, and graphic reasoning, construct proofs, and formulate counter-examples. (pp. 263-264)

Aligning Instruction and Assessment

Current tests, in particular standardized tests and textbook exercises that focus heavily on template word problems and computation, do not reflect the broad goals outlined in the *Standards*. The documented influence of external testing on local mathematics curricula and on teachers' instructional practices points to the importance of creating alternative assessments that exemplify the philosophy and content of the reform curriculum. To that end, new modes of assessment are being advanced and a draft of assessment standards has been developed by NCTM to complement their earlier works on curriculum, evaluation, and teaching. Although not in final form, the main ideas concerning a new vision of mathematics assessment have been presented for review to teachers and other mathematics educators. Underlying specific recommendations are the following general themes:

A. *Assessment should reflect the mathematics that is important for students to know.* Both procedural and conceptual knowledge should be addressed with particular focus on using mathematics to solve novel and interesting problems. To align with the *Standards*, assessment activities should emphasize mathematics as structure, communication, connections, reasoning, and problem solving.

B. *Assessment should enhance mathematics learning, not only measure it.* The mathematics tasks that students engage in should have value as instructional activities in addition to their value as documentation of mathematics achievement. The goal is to create activities and tasks that contribute to both learning and assessment.

C. *Assessment should promote equity* by providing ample opportunities for students of diverse learning styles and talents to demonstrate their mathematical knowledge. The use of activities such as hands-on experimentation, computer simulations, oral presentations, and collaborative projects will provide alternative ways for students to display their mathematical competence.

The importance of creating methods of assessment that are consistent with the new curriculum has led to a plethora of books and articles devoted to this issue. Textbook publishers, individual mathematics educators and national mathematics organizations have begun to focus their attention on creating alternative methods of assessment. Most of these efforts have been directed to the following: (1) developing performance tasks or mathematics investigations, (2) creating open-ended questions to replace traditional short one-answer exercises, (3) formulating the method of student portfolios to record student progress, (4) examining the use of writing to demonstrate student understanding, and (5) exploring the use of student observations and interviews as a means of assessing student performance. Because of the large selection of new materials, it has become important for teachers to be informed about the general issues surrounding assessment and to be critical consumers of these resources.

Assessment Initiatives in New York State

In 1991, the New York State Education Department disseminated its *New Compact for Learning*, a document that outlines goals for the improvement of the State's educational system. As part of this general proposal, both local and State assessment will be revised. In particular, as a supplement to the Regent's exams, students also will be evaluated using performance assessments such as teaching observations, laboratory experiments, individual and group projects, exhibitions, and interviews. The use of portfolios to document students' progress over time will be a key element of the new system. These portfolios may contain (in addition to traditional tests) essay exams, self-evaluation protocols, term papers, computer programs and evidence of "thinking processes in mathematical and scientific problem solving" (SUNY, 1994, p. 5). Standardized multiple-choice tests will be only one part of the system; examinations that "measure problem-solving skills and the ability to analyze and synthesize" (p. 5) also will be included.

The State University of New York is currently participating in a number of collaborative initiatives that relate to the evaluation of student achievement. SUNY faculty and public school teachers met in 1994 to begin a dialogue on a Regent's portfolio, which will be an assessment file of high school achievements that students send to college for use in admission and academic advising. All forms of authentic assessment will involve teachers in the evaluation process to a greater extent than under the present system. Accomplishing these new objectives will require an informed and involved teaching corps who have expertise in creating locally-genérated assessment tools and in evaluating new forms of student learning and performance.

Professional Development of Teachers

The beliefs and behaviors of classroom teachers will determine the degree of success of the mathematics reform agenda. To change the direction of school mathematics, it is important that teachers become comfortable with ill-structured problems having multiple solutions, become curious and enthusiastic about mathematical explorations, and become confident in their own ability to enhance their mathematical expertise. Teachers should be able to judge the value of mathematics activities, be able to identify questions that lead to further discourse, and be able to differentiate between good problems and superficial ones. We believe that it is important that all teachers have personal learning experiences with meaningful, complex, open-ended problem solving in order to facilitate this activity within the classroom. We believe, too, that interactions among elementary and secondary teachers will allow each group to become familiar with the essential features of the entire school curriculum in order to view the mathematics of their particular grade level in a meaningful context. Through continuing education programs, teachers should be offered the opportunity to expand their abilities to use and create exemplary instructional and assessment materials. In addition, it is important that teachers become more confident in their own abilities to reason and communicate mathematically.

Rationale for Collaboration

Both authors have developed a professional development course for teachers that bridges the gap between the two areas of "content" and "pedagogy." The goals of the course are twofold: (1) for students to become informed about major assessment initiatives, issues of test validity and reliability as they relate to authentic assessment, and the integration of diverse modes of assessment into their classroom practices and (2) for students to extend their mathematics knowledge as they solve, create, and evaluate mathematics tasks. In the reform model of school mathematics learning, the distinction between problems to be used for instruction and those appropriate for assessment has become blurred. Analogously, in the education of future and current teachers, the dichotomy between what is to be taught (the business of Departments of Mathematics) and how it should be taught and assessed (the business of Schools of Education) is often a barrier to meaningful integration of knowledge necessary for effective classroom teaching. The method of instruction that teachers select must fit the mathematical ideas in the same way that the method of assessment must match the goals of instruction.

Together, we have academic backgrounds in mathematics, secondary education, testing and evaluation, technology, and teacher training and we both are involved in the preparation of future mathematics teachers as instructors, coordinators of programs, and advisors to elementary and secondary mathematics majors. Our goal in this course is to broaden students' perspectives on mathematics and teaching. Of equal importance is our desire to expand our own effectiveness as instructors and colleagues through the two perspectives that we bring to this collaboration.

Results of a Pilot Study

In the fall of 1994, we conducted a pilot study that examined the ability of preservice teachers to solve a continuum of problems in three topic areas and to distinguish between rote problems and those that provide true problem solving opportunities. The main focus of this study was to determine whether these college students could differentiate worthwhile tasks from superficial ones. We also investigated students' confidence in their own ability to solve nonroutine middle school problems and students' beliefs about the appropriateness of these problems in the middle school curriculum, either as part of instruction or assessment. The participants were all preservice teachers in their last year of undergraduate work who were currently enrolled in either a secondary or elementary mathematics methods course.

The results of this study showed that these education students: (1) were successful in solving problems correctly, especially when working in pairs, (2) could distinguish between problem solving activities and rote exercises but were more comfortable solving structured questions with only one correct answer, (3) intended to restrict their classroom tests to tasks that could be answered quickly and with a small number of possible correct solutions, and (4) would probably change their teaching to align with the content and format of items on a state-mandated test.

Based upon the results, we are encouraged by the ability of education students to work in pairs to solve nonroutine problems successfully and to distinguish between tasks that assess procedural skills and those requiring problem solving ability. We are concerned, however, with students' discomfort in working on open-ended tasks and with students' views about preparing students for external tests. In our opinion, this study underscores the need for a course in mathematics assessment for education students in order to broaden their conceptions of testing and evaluation.

Course Description

The major goal of the course is for teachers to analyze and develop methods of assessing student achievement in mathematics, through collaborative and individual mathematical problem solving. We hope that teachers will leave the course with greater confidence in their ability to do mathematics, thereby increasing the likelihood that they will participate in reforming mathematics assessment at the district level as well as creating classroom tasks with greater instructional value.

To this end, teachers will investigate traditional and alternative tasks in the context of the following questions:

What does the task measure?

Does the question represent important mathematics?

What problem solving skills/techniques are used?

How can this question be expanded or changed to create new investigations?

For what purposes or in what context are these tasks appropriate?

What mathematical models and/or mathematical representations are used in the solutions?

What will students learn by investigating this question?

What other ways can the mathematical ideas in this task be assessed?

How will this task affect students' beliefs about the nature of mathematics?

How can technology be used (if at all) to solve this problem?

The course will introduce teachers to the *Assessment Standards for School Mathematics* (NCTM, draft version 1993) and the *Assessment in the Mathematics Classroom: K-12* (1993 Yearbook of the NCTM), so they may use these resources as frameworks for judging the quality of mathematics tasks. Some of the problems that teachers critique will come from current standardized tests, released items from state testing (California, for example), and typical school textbooks. Others will be taken from recent compilations of mathematics investigation, performance tasks, student projects, and open-ended questions created by mathematics educators, and NCTM. Examples of sources that contain a wide range of interesting problems include *Problem Posing: Reflections and Applications* (Brown, 1993), *A Collection of Math Lessons: From Grades 3 Through 6* (Burns, 1987), *NCTM Addenda Series, 101 Mathematical Projects: A Resource Book* (Bolt & Hobbes, 1989), and *Teaching with Student Math Notes, Volume 2* (NCTM, 1993).

Another major goal for the course is for teachers to create a portfolio of assessment instruments that they can use in their own classrooms. This collection may include formal and informal observation forms, comment cards or checklists to be used by teachers and students, grading rubrics for problem solving activities, cooperative learning group worksheets, interview questions for teachers and peer evaluators, mathematics attitude surveys, project evaluation coversheets, and multiple choice or short answer question prototypes.

In addition to learning about specific assessment methods, teachers in this course will explore the political and social ramifications of testing and the uses (and misuses) of test results. We hope to present a more global picture of current initiatives in assessment by having teachers become familiar with the recent large-scale portfolio assessment in Vermont, the use of open-ended questions in the state assessment of California and Connecticut, and mathematics assessment in the United Kingdom and the Netherlands. Furthermore, we will discuss the issues of validity and reliability as they relate to new forms of assessment, with particular emphasis on scoring rubrics for open-ended questions and the evaluation of student portfolios.

Our intent is to weave the following themes throughout the course: (1) writing, oral presentation, and discussion as a means of increasing students' mathematics understanding and as a way of communicating this knowledge to others; (2) reflecting upon one's attitudes, beliefs, and emotions related to solving mathematics tasks, (3) using small group learning and collaboration, and (4) promoting the active participation by students in all aspects of the course, including a self-assessment component.

Conclusion

To change the direction of school mathematics, it is important that teachers be able to judge the value of mathematics activities, be able to identify questions and tasks that lead to further discourse, and be able to differentiate between good problems and superficial ones. But for teachers to incorporate these new tasks into the evaluation of their students, it is essential that they too become comfortable with ill-structured problems having multiple solutions, become curious and enthusiastic about mathematical investigations, and become confident in their own ability to enhance their mathematical proficiency.

Classroom teachers must not only become familiar with the new assessment tools but be able to integrate them into their classrooms in a relevant and appropriate way. Teachers with a limited or dated background in mathematics education may be unsure of their own expertise in solving these new tasks. However, if teachers have personal and professional experiences with meaningful, complex, open-ended problem solving, it is more likely that they will facilitate this activity within the classroom. Through continuing education programs and other professional development activities, teachers can expand their abilities to use and create exemplary assessment materials. For as we ask students to participate in the process of creating, constructing, and discovering mathematics, we need to give teachers the opportunities to do the same.

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PORTFOLIOS: EMERGING VOICES

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Institutions of higher education have been faced with changes in the composition of their student populations. Out of more than 12 million students attending colleges and universities in pursuit of an undergraduate degree, over 50% are women and greater than 40% are 25 years of age or older. Otterbein College has experienced substantial growth over the past decade; this growth mirrors national trends. Women are in the majority, particularly when we consider our adult student population. As a result, it has become increasingly important to reassess curriculum and instruction in light of changing demographics.

Grant monies from CAPHE (The Consortium for Private Higher Education) afforded us the opportunity to conduct an intensive, three-year institutional self-study. Project directors examined attitudes, learning styles, and goals of traditional-age and adult learners as well as institutional responses to the two populations. The project had three specific objectives: 1) to evaluate existing academic and non-academic services for adult students in terms of their effectiveness, need and availability as compared with services provided to traditional-age students; 2) to sensitize faculty to existing conditions and to encourage careful consideration of instructional alternatives; and 3) to determine the applicability of findings to other institutions. Questionnaires were administered to adults and traditional-age students. Items tapped attitudes about curriculum, instructional preferences, and learning styles. Analysis of questionnaire responses (descriptive in nature) shaped the direction of qualitative research activities. These included: writing samples, classroom observations, and follow-up interviews.

Student attitude surveys were administered to 370 students (104 males; 266 females) in 1989 and 345 students (111 males, 234 females) in 1991. In order to reconcile the apparent contradiction of adult females who classified themselves as intuitive learners, yet selected lecture mode as their preferred style of instruction and to compare the learning experiences of adult and traditional-age females, writing samples were collected from 63 adult and 47 traditional-age females. A control sample was also collected from 30 traditional-age males. The essay prompt was one of the interview questions used by Belenky et al. (1986) in their landmark study, Women's Ways of Knowing.

As a follow-up to concerns expressed by traditional-age students on the 1989 survey that adults were favored by instructors and were more demanding with respect to classroom time, systematic observations which focused on student participation were conducted in 57 classrooms over four academic quarters. Ten disciplines were represented in the sample; classes observed included day, evening, and weekend offerings.

Faculty and students were interviewed in order to get a clearer understanding of questionnaire responses, themes that emerged from the writing samples, and participation patterns observed in classrooms. During these interviews, participants were asked to respond to generalizations based on findings, to generate explanations for contradictory information, and to draw conclusions about the significance of the data.

Student attitude surveys were administered to adult and traditional-age students during Spring Term, 1989, and again during Spring Term, 1991. Targeted questions were inserted into standard ACT surveys in order to tap responses related to learning style, teaching formats, classroom age composition, and linkages between prior experience and course content. Generally, 1989 and 1991 data were consistent. The only notable shifts over the two years indicated a growing acceptance for the notion of a mixed-age campus. Adults expressed less interest in age-segregated classes (42% in 1989; 14.3% in 1991) and traditional-age students were less threatened by adults in their classes (61% had typed adults as "demanding" in 1989; only 10.5% did so in 1991).

Both the 1989 and 1991 surveys revealed that older students, both male and female, were most comfortable in lecture classes. There was a relationship between age and instructional format choice within the adult group; 39.7% of 23-29 year olds, 43.8% of 30-39 year olds, and 50% of 40-65 year olds chose lectures over small groups, independent study, laboratory, or tutorials. Traditional-age students appeared to be more receptive to participatory classroom experiences; less than 20% indicated that they were least comfortable in a small group format. In fact, approximately one-quarter of traditional females in 1989 and again in 1991 expressed a preference for working in small groups.

Females, particularly those in the traditional-age category, were uncomfortable about speaking in a large group setting. They indicated that their prior experiences were useful for preparing written assignments but less so for participating in group discussions. Less than one-third of traditional-age males expressed discomfort over speaking in a large group. However, they too felt that prior experience gave them little to go on when asked to participate in discussions. Both male and female adults, on the other hand, indicated that past experience prepared them well to add useful information to classroom conversation. Despite the fact that they had something to offer, adults were reluctant to speak up in large classes.

Surveys tapped perceptions and attitudes which raised questions: Why would adults, particularly adult females, respond positively to traditional modes of instruction and negatively to small group, participatory formats? Why were all females so reluctant to speak out or to share prior experiences in classrooms? How would our students describe educationally significant experiences?

Writing samples were collected using one of the Belenky, Clinchy, Goldberger, and Tarule (1986) interview prompts ("Discuss the most powerful learning experience you have had either in or out of school including reasons for your selection of this experience and its significance to your life.") An analysis of writing samples revealed that 55 of the 63 adult females and 42 of the 47 traditional-age females described events other than academic as their most important learning experiences. All of the 30 males included in the control sample discussed academic or work-related examples in their writing.

A common theme underlying adult female responses was: "I have learned what I know in life through my own experiences the hard way, through trial-and-error, and I don't intend to give up any hard-won territory." Traditional-age females also shared a common theme in their writings: "If I could just find out what the secret is to survival, learning might become a priority." Relationships were seen as educative by both female populations. Males, in contrast, linked significant educational experiences directly and pragmatically to future career goals. College taught males to "work hard, learn to get along with others, and receive/pass along information." In addition, college was a source of "contacts."

Adult females had limited expectations for formal schooling; significant learning takes place outside of classrooms. Traditional-age females also doubted that academics would provide valid answers to important questions but were more open to "connected" approaches which could provide more personalized and, therefore, more powerful opportunities to learn. For males, the fit between learning and formal schooling seemed quite good.

How did these students behave in actual classrooms? Class observations revealed the following: 1) participation increases when group size is relatively small; 2) adults raise "how-to," procedural issues and traditional-age students are more likely to make content-related contributions; and 3) females, in particular, are affected by the age composition of their classes. Generally, college classrooms are teacher-dominated; student talk is limited. Small and/or homogeneous groups seem to increase the likelihood that students will participate in classroom conversations.

Traditional-age females needed little coaxing to move beyond the classic paradigm. They expressed openness to less conventional teaching strategies. Their silence was eliminated in small groups; active participation led to greater engagement. Perhaps, as the writing samples indicated, their willingness stemmed from a "searching" orientation. If formal education could support their search for a voice, it would become more meaningful and, therefore, more powerful.

Interviews with adult students yielded interesting insights. The women expressed concerns over instructional strategies which required open-ended participation (group assignments; self-directed learning activities). A more traditional format was easier to control. The student follows the syllabus, does the assignments, and attends class. Group assignments and student-centered formats may require extra time, force the student to depend on others, and lack a clear focus. Therefore, a passive learning mode may not be preferred; instead it might be the most expedient mode for adults who play multiple roles (worker, parent and student).

In addition, over half of our traditional-age females indicated on the student survey that they were most comfortable listening to their peers or working in small groups. These preferences send the message that increasing numbers of new undergraduates may be looking for a "reformed" academy. Future undergraduates who have been exposed to active learning strategies, cooperative approaches, and alternative forms of assessment in high school will not be content with hierarchical, passive, teacher-centered classes.

In the spirit of reform, we chose to restructure two of our own courses through the use of classroom portfolios. While portfolios are not new to the academy (see Belanoff & Dickson for a collection of articles on portfolio assessment in writing programs and Edgerton, Hutchings & Quinlan for a discussion of teaching portfolios), there has been renewed interest in portfolios as a vehicle to affect change in teaching practices and to measure learning. We chose two very different courses: one was an undergraduate advanced composition course composed of traditional-age students and the other was a graduate course in advanced educational psychology for practicing teachers. Both of us attempted to integrate our new understandings into course content and delivery. Thus, because one course was aimed at traditional students, it had an approach which was consistent with their learning needs. The educational psychology offering, on the other hand, was developed with adult learners in mind.

Our research indicated that traditional-age females might be more engaged in a class which was structured collaboratively and permitted them increased autonomy for course direction and materials. In addition, smaller groups of students would facilitate classroom discussion by raising the comfort level for speaking. Both of these outcomes would affect traditional-age females positively; however, one of the primary goals of curriculum restructuring was reducing the student dependency on faculty members for emotional support and subsequently increasing student self-esteem in their own academic abilities. Making learning a rewarding personal experience for this population would forge that important connection between personal and educational experiences previously unmet by the institution.

An opportunity to incorporate such objectives in a course occurred in Winter Term, 1993, when I first taught an advanced writing course for English majors. Traditionally, the course had been instructor-focused using a lecture format. Students read examples of literature, primarily essays, and wrote several papers of their own. Some investigation of writing styles and language were also included in the course.

Wanting to meet the needs of both traditional-age females and males as expressed in the results of our research, I isolated portfolio writing and peer group evaluation as the two most effective teaching strategies for restructuring the course. Portfolio writing would permit students to control the writing topics, the number of paper revisions, and, ultimately, the submission of work for final evaluation. Most of the decisions about the material generated and developed resided in students' hands.

Additional reinforcement for using the portfolio method was the response by traditional-age females that their past experiences were the most useful in writing assignments. Using the portfolio format, therefore, would encourage students to combine their own experiential topics with a writing process which permitted ten weeks of revision and maturation. My expectations were that students' personal voices would emerge from this writing experience and that this would strengthen both the technical skills and self-esteem of these students.

Peer groups were planned to introduce small group collaborative learning techniques. Groups of four or five students were to meet at least three of the five required days and these students would serve as a review/editorial board within each group. In the actual execution of this plan, I permitted students to "try out" different group combinations for two weeks before assigning permanent groups. Students were also permitted to write me a personal note discussing why they could/could not work with any other students. In actuality, after the two week group trials, students only selected from a positive choice of working with the strongest editors.

The structure of the class activities and requirements were limited to:

1. Submission of portfolios for teacher evaluation during weeks four and eight. Work would be evaluated from the viewpoint of what grade it would receive if submitted during week ten in the same form.

2. Students duplicating each piece of their work discussed within the peer editing groups. Seeing this requirement carried out became part of group responsibilities. In addition, each group set the agenda for which student's work would be the subject for daily discussion.

3. Submission of final portfolio for evaluation during week ten. This portfolio would contain four final pieces of writing and all the revisions for each piece. Included would be one review, one commentary, one long investigative paper, and one creative piece. Also attached to each final piece was a review sheet which required students to analyze the strengths and weaknesses of their work.

4. Presentation of a final magazine from each group composed of the best selections in each required category. Each group determined which works they would publish and then discussed the reasons for those choices with the class as a whole.

There were some minor rough patches at the outset: some students failed to duplicate work, some cut class on a day when they were presenting their work in a group. However, the course as a whole was an overwhelming success. In a nationally-formed evaluation (IDEA) taken at the conclusion of the course, students ranked the course in the 80th percentile in comparison with similar courses; they ranked it in the 85th percentile of instructors they would like to have teach them again; and, responded at the 92nd percentile when evaluating their improved attitude in the field. Students claimed they felt more responsible for the outcome of this writing than any academic writing they had ever done. In fact, they pressured me to get the portfolios back after I evaluated them for a final grade. Small groups worked particularly well for females since they were able to express opinions and have them enacted. The actual class makeup consisted of sixteen females and four males; only one group, however, was composed entirely of females. As hoped for, small groups did facilitate conversation. A positive outcome of this was the naturalness of traditional-age females speaking frequently when the class met as a whole group. Their opinions had been reinforced within the smaller groups and they felt more positively about making comments on assigned readings and editorial exercises in class. In addition, as the class progressed, my support and expertise was reduced to making comments about evaluated work they had already made decisions about; students became more positive about their own ability to evaluate work, and, as I moved from group to group during editing days making suggestions about their writing, students would frequently defend their writing choices over mine. Increased autonomy certainly helped students' self-esteem for their writing skills.

Perhaps the most interested outcome of the course restructuring was the type of topics which emerged. As I read the portfolios in their final submissions, I recognized a trend in the female student topics. With only sixteen female students in the course, nine of them wrote about physical or sexual abuse. Three students wrote about lesbian issues from personal viewpoints; and, several others discussed personal life choices they made which had been difficult to discuss previous to writing about them. These papers were written in both personal essay and creative fiction format and frequently were not the original topic choices students had made. The ten-week period plus the freedom to make changes in subject matter permitted by the portfolio structure allowed their true personal voices to emerge. In reading these papers, I was reminded of the results of our research where traditional-age females stated that their past experience was most useful for writing assignments and also that they wanted to find a secret to survival. The personal voices which emerged in the writings of the female students indicated that they had taken steps toward surviving by writing through some of their experiences. The encouragement given to these writers within their small peer groups helped them develop both as technical and personal writers.

Many of the students also remarked that they felt the editorial and writing skills they gained from the collaborative class format would transfer to other courses. In this way, the class was a foundation for students to participate more actively in classrooms and to engage in the educational process in a more personal manner. The many positive outcomes of this pilot course indicated we had discovered a way to reach traditional-age students, especially the females, and merge their personal and academic experiences in a more meaningful and creative way.

Emerging Professional Voices: Advanced Educational Psychology (Fayne)

Our research highlighted some important characteristics of adult learners that, if ignored, had the potential to sabotage instructional innovation. Adults want the "rules of the academic game" to be clear. They also want time demands to be predictable. Only with precise directions, articulated scoring criteria, and limits on out-of-class meeting requirements did portfolios groups and portfolio assessment stand a chance with adults.

It was important that our graduate students who were practicing teachers look favorably on portfolios. First, they needed an opportunity to develop their "professional voice." I had taught the advanced education psychology course twice before and both times had been frustrated by the discrepancy between students' formal and informal writing abilities. Students had little trouble relating personal classroom stories, but when expected to produce a scholarly or academic paper, they either continued to write informally or they produced rigid, awkward, "hyper-formal" prose. Secondly, I wanted to sell teachers on portfolios so that they would consider them for their own pupils. I was hopeful that they would see how powerful self-directed learning, peer editing and authentic assessment could be.

Portfolio pieces were described in the syllabus with great attention given to directions and scoring criteria. The following were to be included in the final submissions:

1. Academic Paper: Students were to write a critical book review or brief literature survey which followed guidelines for published articles in practitioner-oriented journals.

2. Performance Assessment: Students had to design a performance assessment which could be used in their classrooms. They had to delineate objectives, describe tasks, provide directions, and develop scoring criteria. There was an expectation that students would revise this assignment after piloting the instrument or technique with their pupils.

3. Data Gathering Report: Students were to pick one of two exercises assigned during the term that introduced them to qualitative research techniques. After receiving peer and instructor feedback, they were to re-do the field observation or interview and re-write the report.

4. Journal Entry: Students selected one journal entry representing their best thinking from their reading response journal.

5. Cover Letter: After compiling materials, students were to defend their pieces, reflect on their writing and thinking, and discuss the merits and drawbacks of the portfolio process.

Students had the opportunity to assign a weight to each piece; the entire portfolio was worth 75% of the final grade. Throughout the term, students met in portfolio groups during class (at least 40 minutes per week). At that time, I moved from one group to another providing feedback or clarifying expectations when asked to do so.

Cover letters from the nine graduate students (all women) stated explicitly that each piece required a different writing style. All agreed that journal writing was the most "natural." Recent college graduates selected the academic paper as the assignment to be given the greatest weight. Seasoned teachers, on the other hand, picked the performance assessment piece and an explication of current practice was more familiar territory for them. Reporting on field data was tricky for all participants. Cover letters discussed trouble balancing parsimony with a need to "capture" the classroom atmosphere or the personality of the interviewee. Final drafts actually were shorter than earlier drafts, but included specific incidents or actual dialogue which enlivened the reports.

One student articulated sentiments shared by the class:

> My journey took me through the writing process. I brainstormed, drafted, revised, edited and published. I also searched for the right word, struggled to clarify my thoughts, and felt excitement and pride as my ideas took shape. This is what we ask our students to do. Only when we reveal ourselves in writing and feel that risk can we truly know what we are asking of our students.

Both my purposes were served by integrating portfolio assessment into this course. Students developed a heightened awareness of the types of professional and personal writing they needed to be able to do. This was an important first step in establishing a professional voice which would make them successful in a thesis-driven graduate program and in the teacher/researcher community. In addition, they were making positive connections between their own experience with portfolios and those of past, present and future pupils.

In summation, research into the life and learning styles of Otterbein students culminated in curriculum and instructional changes and our course restructuring facilitated new ways to meet the needs of adult and female students more effectively. Our future goal is to sensitize faculty to existing student academic needs and to encourage innovative instructional alternatives.

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Gateway Psychology at Rutgers: Addressing Retention in a Content Course

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Overview Of Gateway

The Gateway Program at Rutgers University is an academic support program which promotes retention in the context of content courses. These courses were introduced at Rutgers in the fall of 1987 in order to boost the retention of students who entered Rutgers with low verbal placement profiles. These include students who were in the top ranks of their high school classes, but came from urban and other underprepared high schools and students for whom English is their second language. It is appropriate to think of Gateway students as underprepared, rather than incapable of doing college-level work. However, by placing them in regular college courses for which they are not adequately prepared, historically they have done very poorly, possibly due to a domino effect of this initial underpreparedness (New Jersey Basic Skills Council, 1987). By providing small, highly structured classes for students at risk, the goal of Gateway has been to provide students with the necessary remedial training in skills and habits necessary for success in college, while allowing them to obtain regular college credit and competence in a subject area.

The Gateway program stands out as unique in the realm of retention programs in focusing remedial efforts in content courses. Typically, academic support programs at colleges and universities are independent of the academic departments (Davis & Clery, 1994; Kluepfel, Parelius, & Roberts, 1994). The Gateway program operates under the assumption that learning the skills without connecting them to any actual course content may not be enough for many students. Bringing retention efforts into the academic classroom provides us with an opportunity to help students make a concrete connection between learning/ study skills and course content, with an eye toward bringing them up to par for future semesters. Gateway programs are offered in departments across the humanities, natural sciences, and social sciences. Each department has freedom in the design of its Gateway course. Gateway courses cover the same amount and type of material as standard sections of the same course, but they are smaller, offering more faculty-student contact and alternative instructional methods.

With the above in mind as a background of the Gateway program, the remainder of this paper will focus on the Gateway Psychology Program, specifically concentrating on the strategies we have found to be successful. They are 1) the lecture/recitation format of the course; 2) a "graduated increase" structure for the assigned material; 3) multiple teaching strategies including a: a "hands on" approach emphasizing demonstrations and student participation, b: the teaching of learning skills, c: an emphasis on cooperative learning, d: frequent assessment via homework assignments and quizzes, e: a paper assignment; and 4) the use of peer tutors.

There are two main components of the Gateway Psychology program: the classroom component and the tutoring component. Overseeing the classroom component is the Program Director who is responsible for the administration of the program and coordination of efforts with the instructors. This component also includes a Lecture Instructor who teaches the lecture and coordinates efforts with the recitation instructors. Finally, there are four recitation instructors who each lead two recitations. Overseeing the tutoring component is the Tutor Coordinator who works closely with the Program Director and trains and supervisors the undergraduate peer tutors

Lecture/Recitation Format

Over time Gateway Psychology has evolved into a lecture/recitation format with students attending two lectures (55 minutes) and one small group recitation (55 minutes) per week. This combines the close instructor/student contact, which is a strength of the program with the larger, more anonymous lecture in order to prepare students for later courses at Rutgers, which are typically very large. The lecture typically holds up to 120 students, with a maximum of 15 students per recitation. That way, students have the experience of a regular lecture class, without sacrificing the individual attention of small classes. Because the main function of the Gateway Psychology program is to prepare students for subsequent courses, there is a strong skills development component. Students are trained to use effective study strategies (test preparation, reading strategies, etc.) and to apply them in this course. These skills are mainly, but not exclusively, taught during recitations.

Each recitation functions as an independent unit. Students are graded on exams, which they take in lecture, but a certain proportion of their course grades comes from assignments and quizzes in their recitations. Though they meet frequently and exchange ideas, the recitation instructors operate autonomously. Most of the content material is presented in the lecture, so the recitations create an interactive learning environment.

Graduated Increase

Because these students are usually ill-prepared for the rigors of standard college courses, they may have difficulty managing all of the content of a course with as much material as General Psychology, especially if they must learn much of the material independently, as is usually the case in such courses. To train them to handle a complete work load, including independent work, we have structured the course to reflect a "graduated increase" in the amount of material to be learned as well as independent work required. During the semester, the students are responsible for an increasing amount of material, and more importantly, for an increasing level of autonomy. Using the learning principle of shaping, the idea is to train the students, though a series of "successive approximations," to work and think independently.

In the syllabus, some material is designated as "On Your Own" (OYO). It's not covered in class, but the students are responsible for it. The amount of OYO material increases during the course of the semester, until at the end, students are responsible for all material, whether it is covered in class or not. The course has three exams, dividing the semester into three modules. During the first module, most of the material the students are responsible is covered during class time. Only a very small amount of material (maximum of about 2 pages/chapter) was designated as OYO material. The exams were carefully designed to include a few questions from the OYO material, but stressed class content. During the second module, we increased the amount of OYO material in the text and proportionally the number of questions on the exam devoted to the OYO material. During the third module, students were responsible for all of the information, regardless of whether it has been covered or not, approximating the requirement of the typical Rutgers course.

With this structure, students begin the semester with very specific guidelines and only a moderate amount of material to learn. As the semester progresses and we teach them the academic skills, they're given more material to learn and a greater degree of independence. Finally, they end the semester in a format typical of any large Rutgers course. It is important to mention 2 things. First, we should note that for all modules of the course, students are provided with a very detailed study guide, which lists the terms and concepts they will need to know. Second, instructors are more than willing to answer questions about OYO material in class or during office hours. Indeed, such inquiry is one of the skills we hope to build. The point of the OYO material is not to force the students to learn without assistance; it is simply to simulate gradually the experience of a standard class.

To determine whether students were actually learning to handle more work and more independence, we compared students' first and second fall exam grades, using data from the 93-94 academic year. We found no significant difference between their exam performance from the first module (when they were responsible for very little OYO) and the exam performance from the second module (when they were responsible for considerably more OYO material). This supports our belief that the graduated increase structure in combination with the emphasis on skill development is an effective one: students were as prepared for the second exam, which required more independent learning.

However, the final exam scores were significantly lower than both of the other two exams ($p<.0001$ for both comparisons). There are at least 2 possible ways to explore this drop in performance; both suggest a need for more rigorous, structured interventions at this point in the course. One possibility is that the third module is qualitatively different from the first two because there is not specifically outlined OYO material and students have difficulty dealing with this loss of structure. A second possibility is that because the final exam is cumulative, students are overwhelmed by the sheer volume of information. Most professors would agree that performance on cumulative final exams tends to be worse than on other exams.

Teaching Strategies

Hands on approach with lots of demos and the like

A major emphasis in the course is involving students in the learning process. In the past, we have found that students have a difficult time generalizing psychological principles to everyday situations. Therefore, in both the lecture and recitations, we emphasize using demonstrations and activities that require student participation and encourage them to make these connections. In this manner we are trying to increase the efficiency of their functional information processing capacities.

Two examples of typical demonstrations are the use of squirt guns to demonstrate the transmission of neural impulses and the use of lemonade powder to condition students to salivate at the sound of the instructor's voice. These are demonstrations that can be done in the large lecture. The recitations also use such demonstrations, though they place greater emphasis on cooperative learning, which we will discuss below.

Incorporation of learning and study strategies

Because our students are so often lacking in basic study skills, a large component of the course, particularly in the early part of the semester, emphasizes study strategies. For example, during their first or second recitation, instructors cover the SQ3R study method. They teach the elements of the SQ3R method and then walk students through a chapter using this strategy. At times we have also taught the Masur chapter outlining strategy. We have also developed study skills handouts, which we give to students.

In addition to teaching explicit study strategies, we have organized the course so that after two basic introductory chapters, memory is the first major topic covered. We teach the psychology of memory, connecting it specifically to methods of studying for the most efficient recall of material. For example, we teach students how to develop mnemonics for psychological terms and present demonstrations during lecture that show how important it is to organize material and make it meaningful, in order to increase retention of the material. Again, what we are doing is helping students connect the psychology of memory with real life, specifically memory, in the hope that this will increase their studying efficiency. In and of itself, this promotes our goal of teaching regular course content within a skills development framework.

Cooperative learning

Research has shown that cooperative learning fosters both efficient learning and interest in the subject matter (Nastasi & Clements, 1991, for a review). In cooperative learning, students are put in small groups, ideally 3-5 students but sometimes larger, and each is responsible for contributing something to the learning process. Because the lecture has 120 students, specifically so that it emulates the typical large lecture at Rutgers, cooperative learning exercises are done only in the context of recitations.

For example, Pat Wilson, one of the recitation leaders (for 2 1/2 years), has designed a group project, in which students work together, in groups of four, to plan a marketing strategy for a product (either an existing one, or a fictitious one—their choice). They are asked to incorporate principles from several areas of psychology in addressing a real life problem. They begin by exchanging telephone numbers and deciding on the division of labor. Then they spend time in and out of class working on a presentation of their plans. Finally, they do a group presentation. The point of this project is to give them an opportunity not only to apply the information, but also to learn the importance of the application of the concepts, not just the memorization. Also, they learn the value of working in groups. In the process of discussing the application of the material to a hypothetical real-life situation, they can discover how easy and interesting learning can be.

Frequent assignments & quizzes

When they enter the college environment, students typically leave behind the comfortable structure of daily homework assignments, quizzes, and other external incentives for breaking the material to be learned into manageable chunks. This is often very overwhelming for students, and probably more so for the underprepared student. In Gateway, we provide an "external scaffolding" to promote the development of effective learning/study strategies. We do this through the use of regular homework assignments and quizzes in the recitations. Our goal is to (require) students to set regular time aside for reading, studying, and learning, rather than cramming for exams at the last minute. Hopefully, they can generalize these habits to later, less structured, classes.

Paper assignment

One of the main assignments during the semester is a short writing assignment. In pursuing our efforts to acclimate students to the college academic environment while they are acquiring knowledge of principles of psychology, we instituted a short writing assignment, geared toward helping students master the skills associated with being a psychology major. Students are required to write a brief (3-5 pages) summary of a research article from a psychological journal. Our goals with this assignment are two-fold. First, as we stated above, our students are placed into Gateway classes because they have deficiencies in their verbal placement exams. A majority of them are deficient in their writing skills, a skill that will be very important to develop during their years at Rutgers. Thus, one of our goals with this assignment is to help our students improve their writing abilities. Secondly, Gateway courses emphasize learning skills within the context of a specific course content. Our second goal is to introduce students to original psychological research.

Realizing that this is an intimidating, and potentially difficult, assignment, we have organized it in a very structured manner. At the beginning of the semester, students are given a handout that details the requirements of the paper assignment. This handout includes details of the requirements (including important dates), tips on writing article summaries, a list of articles from which to choose (including abstracts), and a worksheet to be completed.

For students, the first step in the writing assignment process involves selection of an article. Each semester, the lecture and recitation instructors carefully select articles from which students choose one to summarize. We choose articles that are at a level that the student can understand and that reflect a variety of psychological topics. We pay particular attention to the clarity of the article, so that students can complete the assignment with a minimum of frustration.

After students have selected an article and found it in the library, the second step is to complete a worksheet. The worksheet includes very specific questions about the article, following exactly the format of a standard psychological research article. Students are expected to read their article and then answer the questions on the worksheet in their own words. Our purpose with the worksheet is to assess the students' knowledge of their articles and to catch possible plagiarism before it begins. Worksheets are not graded. Rather, each worksheet is read and commented on extensively by the recitation instructor.

Next, students use their answers from the worksheet and feedback from their instructor to write a rough draft of the paper. The recitation instructor then reads and extensively comments on this rough draft. Not surprisingly, the rough drafts are typically quite poor. Rough drafts are not assigned permanent grades. Some recitation instructors do assign temporary grades to give students an idea of how they stand. Students are allowed to write as many rough drafts as they want and are given feedback on each. While few students write more than one or two rough drafts, it has been our experience that some really do appreciate the opportunity to revise the paper more than once and these tend to be our best papers.

The final step is the finished product. Students use feedback on the rough drafts to write a final draft of the paper. These final drafts tend to be quite good. The final paper is due before the end of the semester so that instructors can have them graded by the final exam at the latest. Once again, students are given extensive feedback on their paper.

This assignment has the advantages of: 1) acclimating students to the library and psychology journal article; 2) increasing students' understanding of the scientific process by reading a study and articulating its hypotheses, design, and conclusions; and 3) improving their writing skills.

Tutoring

Throughout most of its history, the Gateway Psychology program has employed paid or unpaid tutors, both undergraduate and graduate, as part of its program. Beginning in the Fall, 1990 semester and continuing through the 1993-94 academic year, a fieldwork course was instituted whereby advanced undergraduate students could receive up to 6 credits (3 per semester) tutoring Gateway students. Tutors were an invaluable addition to the Gateway course. Gateway teaching is highly time-consuming; tutors provide much of the one-on-one assistance required by students. Also, many students feel more comfortable approaching a peer for assistance than approaching a professor.

Over the years of its existence, the tutor course evolved into a structured course, consisting of three components: tutor training, tutoring, and an academic component.

To boost the *training* component, a series of videotapes was purchased for promoting effective tutor strategies (the UCLA GPN Tutor's Guide and the CUNY "Instructional Strategies for Learning Disabled Community College students"). Students were provided with an outline of "tutor tips" based on the GPN tapes and, as a group, viewed and discussed the tapes. Students were also given extensive notes from a workshop on teaching students to be more efficient readers and learner, as well as information about the Gateway Program and the Psychology Gateway course. Tutors spent the first third of the semester preparing for their roles as tutors.

The second component was *tutoring*. Tutors began to attend recitations as soon as they were assigned (usually at the end of the second week of the semester), and some began tutoring immediately. As part of their tutoring responsibilities, tutors gave one-on-one tutoring sessions, conducted group reviews and "Psych Jeopardy," writing assistance, and also assisted with in-class demonstrations. In the third year, when we began emphasizing small group activities, tutors often assisted by leading a group. On occasion, a tutor would give an entire in-class presentation. The second half of the semester was devoted to tutoring and to reading and discussing articles as a group.

During the final year of the course, tutors were asked to submit a description of strategies they found helpful; they were also observed by the third author in a tutoring or review session, and given oral and/or written feedback about their tutoring. In some cases, a second observation session was necessary to observe whether improvement had occurred as a result of the feedback, and, indeed, it had in each case. For the third, *academic*, component of the course, tutors were asked to write a term paper involving library research on any topic related to the Gateway and/or tutoring experience.

Tutors were also asked to keep records of student attendance at tutoring sessions, and were given an opportunity to make written comments about each student as well. Tutors were often a valuable source of information for the instructor about the difficulties a given student was experiencing in the course. They were also in the unique position of observing classroom behavior during recitation or class: which students were taking good notes, which students were not taking notes, who was paying attention, who was not following the thread of the lecture or demonstration, and so forth.

Tutor effectiveness

There is no one set of strategies that worked in every case to produce an exciting, interactive tutor/student environment. Rather, it depends, in part, on the particular strengths and characteristics of the tutors and the style and characteristics of the students. Also, the climate that the instructor provides from the start is an important one. Some instructors "got the message out" immediately, that tutors were available and students should seek their assistance. Furthermore, those instructors often incorporated the tutors effectively into the classroom environment, seeking their assistance, providing a clear role for them, and/or providing incentive for students to make use of tutors.

Despite the uniqueness of each experience, six dimensions can be discussed which contribute to a successful tutorial learning environment.

1. Emphasizing the importance of seeing tutors and establishing a valid student/tutor "contract:"
2. Tutor preparation/competence in academic discipline;
3. Tutor sensitivity/interpersonal skills;
4. Ability to foster an interactive learning environment;
5. Non-academic training and/or support (e.g., how to manage time, learn the bus system);
6. Serving as peer models.

The greatest problem facing the tutor program was attracting students to make use of tutors. There was great variability from section to section in tutor activity. One factor that appeared to strongly influence tutor usage was an incentive in the form of extra credit "points".

Conclusion

In sum, the strength of the Gateway Psychology program at Rutgers is that we provide retention efforts within the context of a content course. This is implemented through the use of four main components. The first is the structure of the course, which includes lectures and recitations. Second, the course is designed to reflect a graduated increase in the amount of material assigned and the degree of autonomy expected. Third, we use a variety of interactive teaching strategies in both lecture and recitation. Finally, peer tutors work closely with students to supplement lectures and recitations. Through a skills development orientation within an academic course, students are being prepared for future success at a large university.

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Innovations in Group Modes for Adult College Students

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Independent study is an attractive option for adult students who often find it difficult to attend regular classes that conflict with work and family commitments. Yet many students appreciate the social interaction of a group mode. A variety of group formats have evolved at SUNY Empire State College which combine periodic small group meetings with independent study.

The History and the Basic Model of Empire State

SUNY Empire State College operates largely on the basis of guided independent study and has locations throughout New York State. Students earn credit through "learning contracts," many of which are individually designed, and there is no expectation for class meetings. With the possibilities for structuring learning so open, faculty were free to invent ways of working with students in groups, and they have. This report will concentrate on forms that have arisen in the Hudson Valley region, where I have been part of the process.

My first experiment with a group format about 20 years ago has in fact evolved into our basic model. At that time, I had been reading R.D. Laing, the British existential psychiatrist, and I announced that I would do a group study on his writings. Some 10 students and I met for several hours every other week, for six meetings in all, to discuss his books and the development of his ideas. Students read a book and wrote a brief paper for each meeting, and then did a final project. This format, and variations on it, has served us well through the years and across the broadest range of topics. The typical group size is 12 students, plus or minus a few, and six meetings, plus or minus, over a three month period. Students earn four credits. How does significant learning occur?

In a sense, the independent study mode has been extended to the group. Independent study gets us out of the mindset that learning is necessarily related to contact hours of instruction. Rather, what happens in the one-on-one tutorial meetings is that the faculty member (a "mentor") and student focus on the issues most germane to the student, covering the student's insights and questions and identifying strengths and weaknesses. Similarly, group meetings are not devoted to direct instruction. There is too much content to cram into limited hours; moreover, the greatest value of these sessions comes from the opportunities they offer for students, who normally work on their own, to voice their thoughts and interact. The students are apt to make the happy discovery that they are in good company, with fellow students who have led interesting lives and are thoughtful and motivated. The group meetings, just like the one-on-one student-mentor meetings, can focus on the issues that stand out for students. Students react to the readings, debate the topics, and often bring up illustrations from their experience. Ongoing feedback from the group leader to the individual occurs in response to written assignments as well as in the group, and individual conferences can be arranged.

Other Group Modes

What I have described as the basic model is not the only one, and we are continually generating variations and new formats as we gain experience in working with groups and get ideas about how to better adapt to the lives and learning needs of adults. I will describe some of these other modes.

The on-going study group

It is often difficult for students to keep to a group meeting schedule, a limitation that may have brought them to Empire State College in the first place. Moreover, the start and end dates of the group might not coincide with the student's schedule. In response, several forms of "on-going" groups have emerged that students may join at any time. In these cases, students commit themselves to a certain amount of participation, usually a set number of meetings, and a set amount of work. The longest-running on-going group at our center is "The Writing Process," led by Dr. Mayra Bloom. The group meets weekly and students engage in "freewriting" exercises right there in the group as well as outside the group. They read their compositions aloud and respond to one another. It is a supportive environment, and I can attest, from reading my students' papers before and after, that their fluency as writers increases markedly.

Another approach to an on-going group is to bring together students who are working individually but on related topics. A bi-weekly "Cultural Diversity" group provided a discussion and support forum for students at different stages in their work who were looking at different but related issues.

One experiment in an on-going group has evolved a somewhat different format, a "modular" on-going group. Dr. John Flynn offers a repeating cycle of multimedia "Powerful Texts" in film, art, philosophy, and stories. Students enter at the beginning of a two-credit module and may stay for up to 4 modules.

Residencies

A residency is a longer meeting of a larger group of students. Residencies last all day or a whole weekend, and usually have themes. The first one we did at Hudson Valley was "An Interdisciplinary Study of Childhood." Faculty from various fields such as literature, economics, psychology, education, and social work each led a session which connected their discipline to the theme, for example, "The Image of the Child in Literature" and "Children in Poverty" (for economics). There were reading selections to prepare for the residency and written assignments to follow it.

A "Women's Studies Residency" has become something of a tradition at the College. In the Fall of 1994, some two dozen faculty and 130 students from all over New York State convened in White Plains for a weekend devoted to "Creativity in Women's Lives." From Friday evening to Sunday morning, there were large and small group workshops. Students selected from a list of concurrent workshops and were expected to complete a set of readings, keep a journal on their experiences, and write a report. They earned two credits for these activities.

Mini Group Studies

Sometimes several students express interest in studying a topic. Our job is to bring them together. A faculty member may post a notice to see if there is student interest in a topic. If the response is yes, a small group gets underway. These groups can be formed more or less spontaneously.

Group Studies and Faculty Development

I am the Coordinator of the Empire State College location in Nyack and as such I work with faculty and adjuncts in designing group studies. I encourage group leaders to work with topics that hold a special appeal for them, believing that this is the way to maximize the success of the group and the satisfaction of leader and students alike. My colleagues and I then think through what the appeal to students would be, and if there's a match, it's a "go."

In the Fall of 1994 in Nyack, we offered a group on the theme of "Community and the Individual" and another on "Eastern Religions." These will probably never be offered again, and in the Spring and Summer we have another set of equally "unique" offerings. This is not to say that all the group topics are inventive or esoteric. Groups are also formed to address basic and widespread needs such as "Library and Research Skills." Yet even this group was innovative in design, and included working sessions at local college and community libraries.

The freedom to experiment and create studies is one of the best parts of being a faculty member at Empire. The proposals do not have to go through a curriculum committee or become part of a permanent catalog. There is a vitality and vibrancy to these groups.

I have used group studies for my own development, as a chance to pull together and closely examine a topic of interest to me. An example is the first group I did on R.D. Laing. My current interests are in Consumer Psychology, and I have twice done a group on "The Consumer in Society" for which I gathered my favorite journal articles and chapters. I also use groups to cover more traditional subjects. Several times I offered "Statistics," and in the Fall I did a group on "Social Psychology." I find leading groups to be intellectually stimulating, both for the chance to delve into the content and for the group interaction. More than one mentor has used a group study as a "laboratory" for their Ph.D dissertations and on-going research.

Critical Inquiry Through Group Work

Does it matter that the group offerings are so scattered and perhaps idiosyncratic? That they seem to be a smattering of the universe rather than a systematic coverage of the disciplines? The answer depends on what we expect students to learn. In serving adults, Empire State College works from a framework of life-long learning: learning doesn't begin with college nor end after graduation. We are trying to foster self-direction and critical thinking in our students. In a sense, then, what students are studying may not be as important as their learning how to study — how to question, research, evaluate, and apply. When group leaders are concentrating on their own inquiries, they are modeling that process for students. In addition to learning a subject matter, students are learning how to engage in the inquiry process.

In Conclusion

At a college where students learn mostly through independent study, groups offer an alternative to what could otherwise be a "lonely" college career. A proliferation of group formats and an ever-changing variety of topics characterize the efforts of SUNY Empire State College faculty to adapt learning modalities to the pragmatic, educational, and intellectual needs of adults.

As we loosen our thinking about how and where learning occurs, we conceive of group learning formats other than traditional classroom instruction. The author hopes this account of group modes at SUNY Empire State College will resonate with and inspire educators in other settings to adapt group formats to the needs of their learners.

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INNER VISIONS/OUTER VERSIONS

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We had finished *Romeo and Juliet* and I asked the class, "What are you left with after reading the play?" Silence. I tried again, "What do you think the play is about?" No answer. I tried once more, "What character do you identify with?" No response. In the ensuing silence I decided there had to be a way to help students find their voices. This paper explores some processes I use to transform passive students into active participants.

Students often function as if their only role is to take notes, answer questions, write papers, and pass tests. Even when concerned faculty create genuine opportunities for students to participate actively, students may feel shy about revealing their thoughts, attitudes, and feelings in a classroom. However, I believe active participation based on personal response is the best way for students to connect what they are asked to learn to who they are and what they need.

Personal response to fiction, for example, requires students to imagine what characters look like, where and how they live, how they behave, what they feel, and how they manage the events of their lives. When dealing with any text, students who learn to understand what they bring to a text, how who they are affects their understanding of the work, and how the times in which they live play a part in how they read a work, are readers who can read productively.

To facilitate active participation teachers need to consider classroom arrangement. When students sit in rows they have little choice but to look at the instructor. The form implies hierarchy—the teacher talks, the students listen. Arranging chairs in a circle, when possible, gives each person in the class equal access to everyone, including the instructor. Sitting in a circle also makes it more difficult for students to avoid participating and at the same time, encourages collaboration and cooperation.

Imagemaking in the classroom:

Active participation through personal response requires that students have access to their thoughts, feelings and imaginations, yet I find many students who have difficulty creating mental images. One reason for this may have to do with the amount of television students watch. When we read or listen to the radio we can see the drama in our mind's eye, but watching television provides the viewer with ready-made images created by someone other than themselves. The more television we watch, the easier it is to lose access to our imagemaking capacity. The less practiced we are in making images, the harder it is for us to engage and explore our own imaginations. Without imagination, discovery, invention, and creation is difficult if not impossible.

To help students regain access to their imagination, and as part of evoking dialogue in class, I require students to paint, sculpt, dramatize, and/or write chants, poems, and letters, to generate personal imagery that focuses their ideas and provides a beginning point for entering into the life of a text. By selecting concepts for imagemaking that are complex and difficult to verbalize, students are enabled to discuss ideas and issues they have already begun to concretize on paper or in clay. Students buy their own fingerpaints sets (minimum of six colors: black, brown, red, yellow, blue, green) and non-hardening clay which they bring to every class meeting.

Faculty who use nonnarrative, nonlinguistic media such as fingerpaint or clay help students to discover ways of knowing that are not dependent on words for initial exploration. Often, students have no idea what they will paint or sculpt when given an initial instruction such as, "Paint an image of a passage in the text that compels (angers, irritates, intrigues, amazes) you." Yet when asked to make a specific image in less than one minute, every student makes an image. I usually follow imagemaking with instructions to write words or phrases that come to mind, as one way to help students articulate their ideas, feelings, and questions which are always referenced by the text under discussion. As students gain experience with imagemaking, their responses become more spontaneous and accessible and they find it easier to discuss their thoughts and feelings through oral or written expression.

I choose "primitive" materials—fingerpaint and clay—because working with them requires students to use different neuro-muscular pathways than if they work with brushes and water colors, magic markers or crayons, which are similar to writing with a pen or pencil. We use both two and three dimensional imagery in class because each offers different possibilities for knowing. When working with fingerpaint, students put fingers into pots of paint, choosing color and form with little possibility for precision. Ideas are evoked by color choice and use, as well as pattern and placement. With clay, students explore size, relationship, space, and form. Given less than a minute to work, students quickly forget worries about whether it should be realistic or whether their image is good—they just sculpt.

One difficulty in using imagemaking is that many, if not most, students have had bad experiences in the past with a teacher telling them they can't draw. Naturally, students are reluctant to do what they have been told they aren't good at or shouldn't do. Giving them less than a minute to make an image helps them to by-pass their inner censor and comforts students who can honestly say this is all they could do in the allotted time. One of the primary values of spontaneous imagemaking is that it helps students regain access to first thoughts, often censored as being of no use or not good enough. Yet our first thoughts may contain valuable ideas and impressions that can be developed and shaped in subsequent activity.

As students learn to trust that their images will not be judged, they not only regain access to their imaginations and their ability to make two and three dimensional images very quickly, they also discover unique sources for knowing which prove useful when writing papers or designing projects. Where, in the beginning sixty seconds was too little time, after a while, forty-five seconds is too much time. What has changed is the students' ability to work quickly and effectively without self-censoring, and to be engaged by the discovery process.

Drama and imagemaking:

Using drama to create images to help students explore character behavior, action, and choice, enables students to enter into the life of a particular character and to take on the role of this person without judgment. Having to make choices as if you are a character enables students to understand more profoundly what it might be like to live this person's life. Sometimes, class members take on role and ask the character questions as if they are other characters in the work to extend the exploration of the work.

At times, even if students are only doing internal monologues, some feel self-conscious. To assuage this, students can close their eyes and imagine their characters—what he or she looks like, what their environment looks and feels like, enemies, friends—in as great detail as possible. The stronger the mental images, the more information students have, and the less likely they are to feel self-conscious. Allowing students to repeat their monologues, dialogues or role-playing more than once also helps to diminish self-consciousness, as does talking about why students feel uncomfortable and what the class and teacher can do to help everyone feel more productive.

Occasionally students become so invested in their role-playing they find it hard to get out of role. One effective way to help them "debrief" is to ask them to answer mundane questions such as what they (students) had for breakfast or what their favorite music is. Shaking out wrists and fingers, standing up and stretching, or making silly vocal sounds all help students to step out of role. Class members can also develop closing rituals such as standing in a circle holding hands or a moment of silence to help bring drama work to an end effectively.

Planning a session:

Planning for class begins with the choice of a focus which is derived from an aspect of the text. I base my choice on student experience, personal interest in the text, student participation, and ideas arising from the text. Using the selected focus as the framework, all subsequent imagery work and class activity is designed to stimulate discussion, and oral and written and expression. Each class session ends with a time for reflection, encouraging students to consider what they have learned, how they think and feel about what has been explored, and new questions or ideas that have been evoked by the class work.

When talking about their images students are asked to state briefly what they think is going on in their images, or what ideas arise from the images. Students are told not to explain or justify their work. Classmates are encouraged to ask questions to learn more about an image or ideas evoked by the image. No student is allowed to comment about the quality of an image because the images are about uncovering ways of knowing, not about making art. In the beginning, when students are asked to talk about their images there are often many periods of silence, when no one wants to volunteer, yet allowing the silences is usually productive because students come to understand there is no hiding place. No way to pretend invisibility. With experience, students learn to be forthcoming and to help those who feel less adequate to participate more fully.

Suggestions for the use of imagery when exploring a text:

Paint: A telling moment from a specific passage in the text that compels you to notice this passage.

Write: Words, ideas, and/or phrases that come to mind.

Share: Images, words, and a particular passage in the text. Talk about why you have chosen your passage.

Reflect: On ideas evoked by images and passages.

Sculpt: An image of the protagonist at the beginning of the text in relationship to a significant place, person, or event in protagonist's life. Choose a specific passage as your reference point.

Share: Sculptures and passages. Discuss why your choice matters to you.

Reflect: On images and choice of passages.

Paint: An image of a character in a moment of crisis.

Create: An internal monologue (character talks to his or herself) of about one minute, exploring the thoughts and feelings of your chosen character.

Share: Monologues.

Ask: Character questions, in role, as a character in the text.

Reflect: Out of role, on issues and ideas evoked by monologues.

Select: A passage from the text that symbolizes an important moment in the character's life.

Sculpt: Symbol of character's change or transformation.

Read: Passage with appropriate subtext (character motivation and intention), as if you are the character.

Reflect: On ideas and feelings evoked by images, readings, and symbolic choices.

Working with a story:

To demonstrate the use of imagemaking in the classroom let us look at "The Old Woman," a story by African writer, Bessie Head. The story begins with a description of the Old Woman:

> She was so frail that her whole body swayed this way and that like a thin stalk of corn in the wind. Her arms were as flat as boards. The flesh hung

> loosely, and her hands which clutched the walking stick were turned outward and knobbed with age. Under her long dress also swayed the tattered edges of several petticoats. The ends of two bony stick-legs peeped out. She had on a pair of sand-shoes. The toes were all sticking out, so that the feet flapped about in them. She wore each shoe on the wrong foot, so that it made the heart turn over with amusement.

Suddenly, she falls to the ground. The narrator thinks she is ill but the Old Woman tells her she is hungry. The narrator offers to make food for her. Later in the day, a strange young woman comes to the narrator's hut but is too shy to speak directly to the narrator. A neighbor elicits the information:

> ...'tell her she helped our relative who collapsed this morning. Tell her the relatives discussed the matter. Tell her we had nothing to give in return, only that one relative said she passes by every day on her way to the water tap. Then we decided to give a pail of water. It is all we have.'

The story ends with the narrator speaking:

> Tell them too. Tell them how natural, sensible, normal is human kindness. Tell them, those who judge my country, Africa, by gain and greed, that the gods walk about her barefoot with no ermine and gold-studded cloaks.

Tales of Tenderness and Power, Heinemann, 1989, p. 42-43.

What follows are a variety of approaches designed for a 75 minute class of about twenty first year university students to explore how imagemaking encourages students to participate actively in class. With more students, the sharing takes place in small groups working simultaneously, discussing their impressions, ideas, and discoveries with the whole class. All directions are those the teacher gives to students. The tasks are structured to allow the themes and ideas embodied in the text to emerge as students respond to the text, examining their thoughts, feelings, and ideas about the work in a collaborative environment where difference of opinion is welcomed. When students ask me to explain "what I want," I merely repeat the task assigned. I want to empower students, to make them decide how they choose to deal with the assignment, based on their understanding of the text and what is required to complete the task.

Focus: Entering into the text

Text: "The Old Woman"

Read: "The Old Woman" to students who listen with eyes closed.

Paint: A telling image (image which lingers after story is heard).

Write: Words/phrases/song titles/ideas that come to mind. Note what makes the image compelling and important to you.

Share: Images and writing.

Reflect: On issues, ideas, and questions evoked by sharing.

Distribute: Copies of text to students.

Sculpt: An image of one character in the story at a particular point. Character can be created from non-human sources such as pail, water, heat, hunger, dust, need, etc.

Create: A brief autobiography of a character as if you are the character.

Ask: Yourself, as the character, a question of great importance to you at a specific point in the story.

Paint: An image of the character in the place and time the question is asked.

Create: An interior monologue that addresses the question. (Character talks to him/herself at a time of crisis or conflict as a way of exploring experience, feelings, ideas and/or consequences of actions.)

Share: Sculptures and monologues (spoken not read).

Paint: An image of "me and the Old Woman."

Reflect: On issues raised by the characters as if you are a character in the story. Use "I" and identify who you are.

Reflect: On story and session out of role.

Three additional explorations:

Collect: And re-distribute questions to participants.

Answer: Question as your character by writing a story. If you don't know how to begin use "Once upon a time" or "In a time long ago and a place far away." Don't moralize or tell reader the point of the story. Let the story speak for itself.

Share: Questions and story answers.

Return: Story answers to the one who asked the question.

Reflect: On stories, issues and process.

Sculpt: Image of Old Woman at a particular point in story.

Write: A journal entry describing her actions, thoughts, and feelings at this time.

Share: Journal entries.

Reflect: On issues, ideas, and feelings raised by journal entries.

Paint: An image of one character in the story at a particular point.

Write: Letter as your character to an important person in your character's life. Identify this person and her/his relationship to your character. Tell about an aspect of your life (as character) and ask this person a question of great importance to you.

Collect: Letters and re-distribute them.

Answer: Letter as if you are person to whom the letter is addressed.

Read: Original letter and answer.

Return: Letters to original writer.

Reflect: On issues, ideas, questions, and feelings evoked by letters.

Participation:

For many students, initial responses are more difficult than subsequent participation One way to overcome reluctance is to have students say something about their image, each in turn, going around in a circle. Another option is to have the first participant choose the next by identifying the person's work he or she would like to hear about. After all images have been shared, I sometimes ask students to formulate questions evoked by the images and text. Often, I merely write the questions on the board so students can consider and discuss issues evoked by the questions, without directly answering those that have been posed. When people make disparaging remarks, students feel reluctant to show their images; participation feels more dangerous. Because correcting a bad situation is much harder than preventing one, suggest that all students use "I" when talking, rather than "you," and do not allow anyone to deprecate the work of others or themselves. Encourage students to take a bit of time for reflection after someone has made a presentation. Give students the chance to process work so that they leave each class session with a sense of closure, ready to move on to their next class or activity.

When students are tired, discouraged or are having trouble focusing on the work, I may ask them to make "an image of myself at this moment" enabling them to acknowledge and put aside distractions so they are better able to concentrate and participate more fully.

Students keep all their painted images, which are dated, titled, and notated with a few words, in a notebook to use as reference material for subsequent class work, papers and projects. Not only do students make images in class, they are also encouraged to paint images while reading, to highlight particular passages or note ideas for use in class discussion.

Processing the session:

Imagemaking is an important tool not only for evoking individual participation, but for stimulating class discussion. Although there are a variety of ways to do this, two simple ways include having students exhibit their work so that all class members can observe each others' work before reflection. A second process involves students looking at their images and making changes or additions to reflect new learning which then becomes one basis for discussing what has been learned.

Asking students to develop questions that arise from their work with the text provides a good beginning for reflection, as does going around the circle and asking students to talk about something they have learned, wonder about, are surprised by, or want to discuss in the next class. If no one has anything to say, I may ask students to write down something that relates to what has transpired in class. The notes are then collected, redistributed, and read by class members who then reflect on what has been shared.

Finally, it is important to design ways to use the last few minutes of class to weave together all the strands of ideas, information, struggle, and learning so that class members leave with a sense of closure. The more intense the class period is, the more time will be needed to reflect. If students have nothing to say, silence allows students to think about the session in their own ways.

Since I have used imagemaking techniques in my courses I have come to understand the importance of providing nonverbal means by which students gain insight into their own knowing. Making and talking about images, asking for suggestions about what images and symbols suggest, and sharing impressions evoked by symbolic representation, have opened up important and meaningful dialogues between my students and me, and among the students without me as intermediary. In the process of sharing imagemaking, students can see that others often feel similarly as they do about issues and experiences, and are thus encouraged to be more open about sharing thoughts and feelings. At the same time, students can disagree and present dissenting points of view without being condemned or judged. Their response is a vital part of the totality of expression which makes the discussion and expression dynamic and informative.

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WAYS OF KNOWING IN EDUCATION AND DIVERSE LEARNING STYLES

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Academia can often seem like a world unto itself. The phrase "ivory tower" denotes the insular atmosphere traditionally associated with settings of post-secondary education. Nevertheless, anyone teaching in these milieus over the past decade or so cannot have escaped hearing about work from diverse areas of inquiry with implications for pedagogy which are far-reaching and global.

These findings come from work in individual learning styles, diversity considerations, learning environments, multiculturalism, mainstreaming, sensory modalities, communication styles, group dynamics, and dyadic teacher-learner transactions.

Similarly, there are many areas of inquiry which previously have been considered to be outside the scope of education, but which today contribute some of the most valuable insights to our field. These include anthropology, communication studies, cosmology, critical thinking, gender studies, information theory, linguistics—including socio- and psycholinguistics, and problem-solving strategies.

Additionally, as if all this were not enough for us to acknowledge that a revolution is underway in the field of education, the very means by which research is carried out is changing rapidly, often departing from traditional hypothesis-testing, laboratory approach methodologies, as well as from case study analysis, to more frequent use of descriptive and naturalistic research models and other ethnographic approaches.

We in academia, then, can no longer be said to inhabit that ivory tower. If Thomas Kuhn, in The Structure of Scientific Revolutions, said, "It is hard to make nature fit a paradigm" (p. 135), then it is almost impossible to make education, specifically postsecondary pedagogy, fit into an isolated discipline divorced from a multitude of related areas of research, methodologies, and perspectives.

One of the developments of the past decade or so has been the refinement of challenges to our traditional views of the nature of human intelligence. Although

Swiss psychologist Jean Piaget worked in the 1920's, it is only recently that his work in the area of developmental psychology and education has started to be applied in various ways to our understanding of mental functionings. In Frames of Mind, a pivotal book in this area, Howard Gardner relates:

> To my mind, a human intellectual competence must entail a set of skills of problem-solving—enabling the individual to resolve genuine problems or difficulties that he or she encounters and, when appropriate, to create an effective product—and must also entail the potential for finding or creating problems—thereby laying the groundwork for the acquisition of new knowledge . . . within a cultural context (pp. 60-61).

This view of intelligence is a radical departure from the traditional views of the use of the Stanford-Binet.

This presentation will explore one aspect of these newer pedagogical ideas about ways of knowing: that of the relationship between multiple intelligences and diverse learning styles. It will offer a survey of some of the newer work in ways of knowing in education, and will give as an example of the use of such innovative approaches, work done with use of sensory modality as reflected in linguistic behavior in a task-oriented, problem-solving context. Implications for postsecondary pedagogy will be noted, as will be suggestions for incorporating these approaches into curricula and classrooms.

The idea of multiple intelligences is not completely new, but it has been expressed most coherently and integrally by Gardner in Frames of Mind, which has the subtitle, The Theory of Multiple Intelligences. The book was first published in 1983. Gardner picks up the strand of inquiry into intelligence as a developmental capability from Piaget, whose view of intelligence as pertaining to problem-solving activities and being capable of growth and transformation in an individual was, similarly, a dramatic departure from the eighteenth-century physician Franz Joseph Gall's discipline of "phrenology" (Gardner, p. 12), or even from Descartes' famous statement: "I think, therefore I am" (Gardner, p. 6). Setting the tone for the way intelligence was viewed in the recent past, Gardner states:

> In the heyday of the psychometric and behaviorist eras, it was generally believed that intelligence was a single entity that was inherited: and that human beings—initially a blank slate—could be trained to learn anything, provided that it was presented in an appropriate way ("Introduction to the Tenth-Anniversary Edition," p. xix).

Explaining how this view has changed today, however, he goes on:

> Nowadays, an increasing number of researchers believe precisely the opposite: that there exists a multitude of intelligences, quite independent of each other; that each intelligence has its own strengths and constraints; that the mind is far from unencumbered at birth; and that it is unexpectedly difficult to teach things that go against early "naive" theories or that challenge the natural liens of force within an intelligence and its matching domains (p. xix).

While he acknowledges, "At first blush, this diagnosis would appear to sound a death knell for formal education" (p. xix), he sets forth in his book the seven types of intelligence considered part of the theory of multiple intelligences.

These include linguistic intelligence; musical; logical-mathematical; spatial; and bodily-kinesthetic intelligences. In addition, he notes what he calls personal and spiritual intelligences. He details what components of understanding and capabilities these intelligences entail, and gives examples of individuals who excel in each.

Well-aware of the far-reaching implications of his MI theory, he comments:

> . . . It might turn out that the whole Western inclination to pick out intelligence—or intelligences—as a "natural kind" may not be the best (or even a proper) way to slice up the human psyche or human behavior. And in such a case, the present theory, like all those it purports to replace, will go the way of philogiston (p. 297).

Moving to developments in another field, Edward T. Hall's work in cultural anthropology is familiar to many people. His book, Beyond Culture, details what he calls low-context and high-context communication settings and cultures. He states:

> The level of context determines everything about the nature of the communication and is the foundation on which all subsequent behavior rests (including symbolic behavior (p. 92).

Foreshadowing Gardner's work, he also relates the following:

> . . . Experiences, particularly having to do with teaching and educating, convinced me that people, even within the confines of a single culture,

> learn in many different ways . . . Man, the animal with the most highly evolved brain, is above all a learning organism. He is designed to learn. The only questions are: How does he do it? And under what circumstances does he do it best? (p. 173).

Well-aware of the implications of such a complex view of intelligence, as well, Hall remarks:

> This common projection of one's sensory capabilities or lack of them may explain why teachers are frequently impatient with, or unsympathetic to, students who do not have the same sensory capabilities as the teacher. In fact, the degree to which most individuals will tenaciously hold on to the notion that everyone else perceives, thinks, and remembers with the same modalities that he does is remarkable . . . (p. 178).

Then Hall catalogues instances of visual, musical (auditory), kinesthetic, and linguistic imaging and memory.

Another writer interested in the use of the senses in apprehension is Diane Ackerman. In *A Natural History of the Senses*, she notes:

> The senses don't just *make sense* of life in bold or subtle acts of clarity, they tear reality apart into vibrant morsels and reassemble them into meaningful pattern ("Introduction," p. xvii).

And along lines which contradict conventional views of intelligence, she observes:

> When scientists, philosophers, and other commentators speak of the real world, they're talking about a myth, a convenient fiction. The world is a construct the brain builds based on the sensory information it's given, and the information is only a small part of all that's available . . . The body edits and prunes experience before sending it to the brain for contemplation or action (p. 304).

Another innovative concept in pedagogy is that of "deutero-learning," or learning to learn, formulated by the anthropologist Gregory Bateson in his essay, "Social Planning and the Concept of Deutero-Learning," and written in 1942 (Bateson, *Steps . . .*, pp. 159-176). In his essay on "The Logical Categories of Learning and Communication," written in 1965 (*Steps . . .*, pp. 279-308), he posits a theory of learning in terms of communication phenomena which echoes some of Piaget's reasoning and foreshadows Gardner's typologies, while setting forth a uniquely Batesonian logic and methodology. In direct opposition to most traditional views of intelligence, as well, in a 1969 essay ("Pathologies of Epistemology," Steps . . ., pp. 478-487) Bateson remarks:

> I don't know how many people today really believe that there is an overall mind separate from the body, separate from the society, and separate from nature (p. 485).

Marshall McLuhan is famous for his term "global village," and for his phrase, "The medium is the message," among other achievements. I once heard him give a lecture at Columbia University's Teachers College, in the 1970's, during which he asked the audience, "Does a fish know it's in water?" to elucidate a point about the capabilities and limitations of intelligence and ways of knowing. While humorous, this riddle poses relevant questions about intelligence for anyone working in education.

In her book, You Just Don't Understand, Deborah Tannen presents a picture of the subtle difficulties men and women have in speaking with each other. Many of her observations have implications for teaching, and models of classroom instruction can be devised by keeping some of her findings in mind. For instance, she noticed that in school groups she studied, girls were often comfortable talking to each other while facing each other, while boys tended to group themselves by sitting side-to-side while they conversed (You just . . ., pp. 265-6). The implications for pedagogy here would be, then, that if students are placed in groups for class exercises and projects, then rather than asking students to form clusters of circles, semi-circles, and the like, that the teacher adhere to groupings the students naturally form on their own to accomplish the learning tasks. Carrying Bateson's idea of learning as evidenced in communication behavior into application in the classroom, it would be interesting for educators to discern which types of learning were best facilitated through which types of communication styles and contexts, even including seating arrangements.

One of the most intriguing new theories can be found in Timothy Ferris' The Mind's Sky: Human Intelligence in a Cosmic Context. Echoing Bateson's dismay at traditional notions of mind/body/society/nature splits, Ferris presents the idea that there is no duality between our ability to perceive reality and the nature of reality itself, but rather, that entities ranging from our brains themselves to the whole universe are part of the same cosmic organism. He writes:

> When I think of the relationship between the universe and the human brain an image that comes to mind is that of a tree . . . the branches

> symbolize the observed universe, while the roots symbolize the brain. Both systems are constantly growing and evolving, and they depend on each other (p. 71).

Conversely, in considering our base for theories and the ways categories of information are usually grouped into subjects, fields, areas, or disciplines, we might well keep in mind the implications of Ferris' further comments:

> We conceive of the universe as a unified entity—a cosmos, as the Greeks put it, meaning a single, harmonious system—and we talk, at times, of feeling "at one with the universe." I wonder why. We are not all that unified—as I've been saying, the apparent unity of mind conceals the multifarious workings of many different brain programs—and the universe is made of a whole lot more parts than is the brain (p. 83).

Another way to approach ways of knowing is to study examples of genius. Ivars Peterson has written a compelling account of the way Sir Isaac Newton learned and worked, in the book, Newton's Clock: Chaos in the Solar System. In the chapter entitled, "Seas of Thought" (pp. 73-97), Peterson details the way Newton was aware of the science of his contemporaries, such as Wren, Hooke, and Halley (the one who discovered the comet), but how Newton nevertheless was able to ask his own questions, in his own ways, to seek information the nature of which was unimaginable to everyone else during his time. While the others were able to formulate the existence of an attractive force which held the planets in orbit around the sun, it was Newton who asked, "What was the nature of that attractive force?" (Peterson, p. 74). It was Newton who answered that question by discovering gravity and setting forth a unified version of the world, not just of gravity, in his Principia—all of which grew out of his ability to form that original question. Not only that, but as Peterson also notes,

> . . . It was Newton's highly mathematical, coherent vision of the universe that changed the course of mathematical physics and set the standards of scientific discourse for centuries to come (p. 82).

But the best description of this new way of knowing comes from Newton himself:

> "I keep the subject constantly before me and wait 'till the first dawnings open slowly, by little and little, into a full and clear light" (p. 84).

Dramatically prefiguring some of the ways of knowing discussed in this paper, Newton recalled:

> . . . I began to think of gravity extending to the orb of the Moon, and having found out how to estimate the force with which a globe revolving within a sphere presses the surface of the sphere . . . I deduced that the forces which keep the planets in their orbs must [be] reciprocally as the square of their distances from the centers about which they revolve: and thereby compared the force requisite to keep the Moon in her orb with the force of gravity at the surface of the Earth, and found them [to] answer pretty nearly (Peterson, pp. 85-86).

When we educators assess our students' work and evidence of learning, I think it would be good for us to bear in mind the fine line between that which might seem, at first, to be fantastical nonsense, and the possibility that the mind before us is demonstrating a new way of knowing which just might change the world.

At this point, I would like to present part of my Ph.D. dissertation study which relates to sensory modalities and learning styles. The research involved face-to-face communication situations in dyads, or two-person groupings, where people gave and received directions on how to get from one place to another. All transactions were spontaneous and unrehearsed (Morrin, 1977, p. 1). The research utilized a naturalistic, descriptive approach, involving transcripts of the verbal transactions in each task-oriented transaction. It also utilized the participation of people from two ethnic groups: Italian-American and Jewish-American men and women.

Specifically, transcripts of the verbal stream of communication were analyzed and coded, and attribution of sensory modalities, as evidenced in the linguistic record of discourse analysis, were noted, charted, tabulated, and analyzed. Distinct patterns of occurrence, of indication of sensory modalities in the linguistic behavior, emerged from the data. The sensory modalities observed in the linguistic record were spatial/visual, temporal (use of time), kinesthetic, and aural-oral (Morrin, p. 219).

One conclusion of the study was that it suggested:

> . . . that scientists utilize the contributions of people from various disciplines in order to increase understanding of communication phenomena (p. 221).

A survey of related literature also revealed that:

> Two final studies in this section of sensory modalities . . . support the theory that students learn through different modalities (tactual/kinesthetic, visual, and auditory, in these works) and that the learning environment can be modified beneficially to meet the needs of different kinds of learners (Morrin, p. 240).

In conclusion, in consideration of the relationship between multiple intelligences and diverse learning styles, Howard Gardner sums up much of the newer research, applications, and pedagogy, when he says, near the end of Frames of Mind:

> . . . it is a principal assumption of this study that individuals are not all alike in their cognitive potentials and their intellectual styles and that education can be more properly carried out if it is tailored to the abilities and needs of the particular individuals involved. Indeed, the cost of trying to treat all individuals the same, or of trying to convey knowledge to individuals in ways uncongenial to their preferred modes of learning, may be great: if at all possible, it is advisable to devise methods for assessing the intellectual profiles of individuals (p. 385).

Further, Gardner sums up:

> . . . I have urged that educators pay close heed to the biological and psychological proclivities of human beings and to the particular historical and cultural context of the locales where they live . . . knowledge is according and will—I hope—continue to accrue about what human beings are like, when considered in relative isolation and as members of a functioning cultural entity (p. 393).

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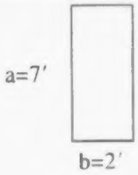
APPENDIX

Interactive Model for Classroom Instruction
Exercises Based on Gardner's Multiple Intelligences

Five of the seven ways of knowing:

- linguistic
- musical
- logical-mathematical
- spatial
- bodily kinesthetic

Sample Problem



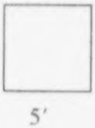
Find the area of the rectangle at left

Sample Approaches Using Gardner's Model

Student Groups	Methodology
Linguistic	Students collaboratively write a problem involving the area of the rectangle and state the problem coherently. For instance, "Mrs. Jones wanted to plant her garden. She needed to know how many seeds she would need. She knew each seed needed 6 inches around it..." Etc.
Musical (auditory)	Students call to each other from various places in a rectangle outlined in chalk on the classroom floor with dimensions as above. Each time a student walks along the line, he/she sings a note along an octave. Students walk along different perimeters and sing at the same time until notes have been sung for each foot.
Logical - Mathematical	Students write an equation to solve for the rectangle's area as many ways as they can. For instance: Area = a x b ... Area = ab ... Area = b x a ... Area = ba ... etc.

Spatial	Students use measuring tape to find objects in the classroom or the outside environment with these dimensions, and literally divide and measure the objects by a foot in length and in width and count the number of times they measured 1 sq. ft.
Bodily-Kinesthetic	We go back to the chalk outline on the classroom floor. Students stand along the perimeters and reach their arms out so they almost touch each other's fingers. They move along the lines a foot at a time and count the number of feet they have passed in two directions, then multiply these for area.

Another Sample Problem



Directions: Find the area of the square above.

Participants volunteer for methodology groups for utilization of linguistic, musical (auditory), logical-mathematical, spatial, and bodily-kinesthetic intelligences in designing classroom exercises to teach the skills needed to solve the problem.

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The Artistic Process: A Model for Teaching and Learning

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It happened in the Parlor Room at Mohonk. Cushioned benches in corner nooks, wood paneling, carved fireplace mantles, and large Chinese urns sheltered conversation and intimacy. High ceilings, large windows and a balcony suggested stretching and reaching to other worlds. The place was an invitation to improvise.

Sun lit the group as we first sat to talk in the corner near the porch overlooking the lake. Then, a few at a time, we spread across the room, looking carefully—open to sensory experience, open to the possibility of the site. Quietly, one of the workshop presenters picked up a pile of construction paper and climbed the stairs to the balcony. Once there, she carefully tore and dropped the pieces to the other two presenters below. A yellow slice spiraled into waiting arms, which then cradled the paper close to the body. A red strip fell directly, hitting the shoulder of a puzzled bystander, stopping an eager runner in her tracks. The two merrily chased little bits of green and red and yellow and blue until they realized much more hit the floor than landed in their hands. They spun listlessly around. An orange flag caught in the railing out of reach to all. A green moon swooped right into an eager grasp, was torn and shared. And then, there was no more paper. Empty hands turned and descended while the two below, with glances to the balcony, picked up the pieces.

A structured improvisation about teaching and learning had been performed. Perhaps, the first presenter who removes herself to the balcony, is the teacher; the construction paper is knowledge or lessons. The two presenters left below are the learners. Teaching and learning is complex. The teacher controls the size, shape and color of the paper, a metaphor for the amount, sequence and delivery mode, and content of learning. The red strip is more compact and defined than the little bits of integrated colors. The very shape will change the way some pieces fall, a triangle's point getting caught in delivery while a moon circle swoops. Different content requires different delivery. The movements of the learners may be metaphors for the different ways that they approach and respond to learning sometimes eager, sometimes listless. One child might gather an idea close and cherish it. Another might be unable to learn because of an outside influence, represented by the puzzled bystander. Some children might share their learning. In this improvisation, teaching and learning is complex, individual, controlled largely by a distant teacher and circumstance, and haphazard. An audience might see far more. And, each time the improvisation is performed new insights on teaching and learning might be realized.

The performance of an improvisation is not completely planned beforehand. The initial structure for this one was developed by the workshop presenters by selecting words. Sight, active learning, levels, a found tool (paper), and the issue of direct or indirect instruction were the raw materials for this version. The presenters were open to the possibilities of the meanings of those words for education. They asked questions about the space and the materials they might use. Gradually a structure, using paper, particular colors and shapes, and the balcony was defined. Performing the improvisation raised more questions and the idea was modified. The artistic process guided the learning in which they engaged. The purpose of the workshop was to engage others in this very same process as a way to examine their own teaching and learning, as a way to reconceive their practice by using improvisation and the languages of the arts (movement, color, shape, space).

The structure, the initial list of words, was designed around selected aspects of learning and teaching:

Senses — touch, taste, smell, hear, see

Intelligences/learning styles — linguistic, musical, kinesthetic, visual/spatial, logical/mathematical, interpersonal, intrapersonal, intuitive, directed, concrete, reflective, abstract, active, legislative, executive, persistent (Gardner, 1983; Sternberg, 1994)

Spatiality — paths, openness, spirals, edges, ramps, bridges, centers, thresholds, grids, levels, nodes

Tools — Found materials from the immediate surroundings to incorporate in the composition.

Issues — inside-outside
quiet-active
direct-indirect
poly-monochromatic
waves-particles
stillness-oscillation
order-chaos
acceleration-deceleration
particular-whole
simultaneity-synchronicity
quick-sustained
solitary-communal

Participants were asked to conceive, create and present a place for learning. Members of the working groups randomly selected a sense, style, spatial quality, tool or issue as a starting point to define their thinking. Individually, and as a group, they explored the room; they created a performance piece using the languages and processes of art. They captured a metaphor for teaching and learning in the improvisations.

To be actively engaged, to not only talk about but also create and perform through the artistic process, was a goal of the workshop. The artistic process, defined by the languages of the arts, provides a model for teaching and learning that utilizes sensory awareness, inquiry, idea and problem generation, production, and reflection. The broader creative process might use any language. Foshay (1962) delineates steps in the creative process as openness, focus, discipline and closure. Being open to one's own experience through heightened sensory awareness, and paying attention to one's own story identifies questions, problems and issues of interest. Focusing narrows and defines the parameters of a problem. Discipline describes the hard work necessary to practice, research, and produce an expression. Closure brings the process to an end, an opportunity for reflection and evaluation.

Motamedi (1982) extends the concept of the creative process through a visual, an upward sweeping looped line, labeled at the beginning as framing and moving through passages labeled probing, exploring, revelating, affirming, reframing, and realizing. The texture of the process moves from objective at framing, to objective and subjective at exploring, deeply subjective at revelating and gradually returns to objective at realizing.

Siler (1995), a painter and installation artist, coined the term "metaforming" to describe the process by which art/scientists work. He lists comparing, relating, experimenting, analyzing, transforming, integrating, connecting, and communicating as integral to that process.

The artistic or creative process is a process of connecting and creating meaning. So is the process of teaching and learning. To the extent that we let learners struggle through the process themselves, they will connect and create meaning for themselves. To the extent we let learners move from objective to subjective to objective understandings, they will integrate learning into their own experience.

Teachers also can use this process to examine and reflect upon their own teaching and learning. The technique of improvisation is in many ways a condensed journey through the artistic process. Improvisation is expected to be quick while still engaging participants in the entire process. Improvisation invites us "to play with real life and thus turn some particular aspect of it into a metaphor that serves to illuminate much that's beyond that particular example" (Kaprow, 1984).

Improvisation asks that you use the senses, identify problems, respond intuitively as well as analytically, engage in in-process evaluation and perform an extemporaneous production. After a performance, discussions, questions, problems, and audience reactions point the way to different solutions. Improvisation is a way of researching or learning that allows teachers and learners to approach an idea as if it were new, to reexamine existing ideas and to work out unknown or interesting ideas.

Performances in the Parlor Room demonstrated the process. Ritual and structure guided the first participant improvisation, creating a metaphor for teaching and learning as sacred and interconnected. The performers clearly defined the space, using found tools for visual structure and for connecting movements in the piece. Teachers and learners were ushered through the process.

The notion of improvisation itself became the unifying concept for the other work, as words were drawn from a hat and acted upon within a circular form, expressing a more chaotic vision of teaching and learning.

Elation and discomfort both played a hand in the performances, and the ensuing discussion highlighted the richness of the experience. Beyond the struggle with the group improvisational process itself, using the artistic process as a way to reflect on teaching practice highlighted a number of concerns that the group identified as worthy of further investigation in their own setting. How is sensory awareness engaged and built upon in teaching? How does the space, and the environment of the classroom dictate the learning process? How actively engaged are teachers and learners? How does the teacher become more conscious of her own level of collaboration and participation in learning? How does it feel to occupy the space of a student, to feel uncomfortable with a new tool or strategy? How much time is provided for reflection and metaphorical thinking in class?

The artistic process and improvisation model a process for teaching and learning that encompasses a broad scope and range of experiences. Which particular steps are we willing to leave to chance? Will we assume that students are open to learning because they are learning something valuable, something that has been known for a long time? Will we assume that students will be creating personal metaphors and connecting learning to their own lives because we have done so? Or, will we structure the teaching and learning environment to support and encourage all aspects of the process? The artistic process and the artistic languages as experienced through structured improvisation engage the teacher and learner from awareness to realization in the process of teaching and learning. The potential for using the artistic process as a model is to ensure that every act of learning is an act of creation.

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Learning About Thinking By Thinking About "Art"

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You should think of this, I guess, as a report from the field. I want to commend you to a theory-based approach to teaching about art that I've evolved over the last twelve or fifteen years, which seems to work remarkably well not only in teaching undergraduates about art, but in teaching them to think as well.

My specific interest is in what we call "art," per se, in the nature of the category in which we're including a thing when we use that term. And I flatter myself that I was instinctively teaching for understanding of that category, before it became fashionable to say so. Given my academically checkered undergraduate career, and more recently my faltering middle-aged memory, it's been easy to convince myself that it's not awfully important to remember things about art like who made what when...and so I try instead to teach kids how to think in the abstract about what "art" might be, at base. I can further justify that emphasis because the approach I take to thinking about it implies a rationale for why the whole endeavor may be worth the trouble, as well as a critical strategy that suggests how it might make sense to talk about art, when one does take the trouble.

I try to teach these things in two courses. This paper is primarily about a 200-level course called "The Artist and the Making of Meaning," in which I spend the better part of seven weeks just developing the theoretical part of the approach, and another seven bringing it pragmatically to bear on various works of various kinds of art. I might add while I'm at it, though, that I also teach a basic 100-level art appreciation course, which is specifically about visual art and pretty standard save for the pointed inclusion early on of three hours of lecturing about this same theory. My doctoral research (Shipps 1994) examined the effect of including such a component in such a standard art appreciation Intro, and it showed significantly better learning as a result of it.

What I want to do here is outline for you this approach to thinking about art that seems to work so well, in either venue; then note some corollary points that follow from it; and finally suggest a few pedagogical strategies that I use in presenting all this that I suspect are a critical part of its success, and why I think that.

I begin by raising the issue of what we might mean, now and in the Westernized world, when we use the term "art." "What about this category 'art'?" I ask my students... "What do you suppose is likely true of a thing included in? What does the word 'art' seem to mean in this society? What might you mean, when you use it?" And then I help them to develop an answer to those questions that is based in rudimentary Structural/semiotic theory.

Now in the past, when I've asked people if they knew what Structuralism and/or semiotics were, they've said yes, and we've proceeded on that basis, only to discover later that whatever they understood wasn't what I understood-usually, I think, because they weren't prepared to oversimplify quite so recklessly as I (chronically) am. So just in case, here's the broad-stroke version of the theory as I present it:

As I understand it, Structuralism is a way of thinking about things that claims at base that in any given situation, the significance/meaning of any element in that situation is purely a function of its relationships to every other element in that situation. A red light, for instance, means one thing - "Stop where you are!" - when arranged in a vertical row with a yellow and a green and displayed near an intersection; it means quite another - "Come on in!" - when displayed by itself over the door of a bordello. And Structuralism holds that all of human society can be described in terms of "structures" - of sets of phenomena perceived by us to be related in some way, and as therefore being significant in that way.

Formal language is the obvious and most highly "structured" example of all this.[1] Fundamentally, it is nothing more than an array of otherwise meaningless sound patterns to which we have ascribed agreed-upon referents, and some agreed-upon rules of organization, of interrelationship, by which we can use them to "make sense." Less obvious and less formalized, though equally common, structures include for instance the "languages" of clothes and/or grooming...according to the current Emerson College versions of which, I know how to "read" the conflation of all-black clothes, Doc Martens, pierced body parts, deathly pallor and a studied sullenness of expression as signifying/ meaning "undergraduate art person." And to cite one more example, perhaps even less obvious: were any of us to be, say, strolling somewhere someday, deep in reverie, and to suddenly come upon a pile of 300 grapefruit, we might momentarily at a loss to know what its significance was, what it "meant"...but upon looking around and noticing as well the simultaneous presence of adolescents in blue smocks, chromed pushcarts, long shelves of canned goods, and a row of cash registers...well, you get the picture.

We all organize, and "read," our experience in terms of such structures, and the "signs" - significant elements - of which they're made. That's how we know we're in a grocery store, and how we "make sense," in general, of our lives. And insofar as art is part of our lives, that's how we make sense of it. We notice aspects of art things and of our experience of them, and we relate those things in ways that make sense. That depicted tree, that specific shade of red, that faceted surface, are all perceived as signs, as our reactions to them. That lyric in relation to that chord change, and how it makes us feel; that plot development in conjunction with that setting and that sentence structure, and what they seem to connote...we notice these things, subjectively and however consciously, relate them as we will, and make meaning of them.

The study of just how we do ascribe meaning to things has lately been called semiotics (or sometimes semiology, in European venues), a "science" based on the thinking of de Saussure and Peirce, who basically postulated that we, as humans, see everything as sign - that it's the nature of the species to do so, and thus probably worth our time to figure out some things about the process. That idea is based on the assumption - generally accepted in the scientific community, and pending input from the Cetaceans - that we as humans are unique in our ability to thus abstract ourselves from our experience and use signs to refer to it...that is, indeed the defining human characteristic. All other animals exist in a sensory continuum, more or less, of direct experience - something to which we, as evolved linguistic creatures, have almost no access. Nike shoe ads ("Just do it...") notwithstanding, except for really violent sneezes, the occasional orgasm, or presumably death, we can lately manage to "just do" very little. We have virtually no direct experience of anything, for much longer than a nanosecond - in the face of any perceived "sign," we instantly think about it, about what else we can sensibly relate it to, about what it means.

And that is, as I understand and present it, the kernel of Structuralism: that it's all (including art) relative, and we made it all up, and that doing so it what it is to be human. That view is what has led to certain wretched excesses of late, on academic/critical high, under the aegis of the controversial critical strategy known as Deconstruction (or more recently, of its apparently more positive successor, Constructivism). Among these is the suggestion that art is, in the Nietzchean sense, dead, an idea that teachers about art like myself, as you might expect, have a hard time incorporating into their professional world-view. Just as some students are beginning to recognize that implication, though, I have found a way to draw back from the abyss.

I shift gears at this point, in the name of continuing with the effort to discuss art as a discernible category, and drop back to some Formalist ideas from the Prague School - notably those of Jacobson (1933-34) and Mukarovsky (1944). They held that - to oversimplify - art was art in that it didn't refer to anything outside itself. Art just is, they said in effect, and others have reiterated that since

("A poem should not mean, but be," said Archibald MacLeish). If one casts this venerable idea in Structural terms, then it becomes possible to describe the "art-ness" of a given phenomenon as that part of it that results from the creator's "juggling," as it were, of the "signs" involved in her medium and/or message...but purely in their own terms, purely for the sake of doing so. This idea of art reaffirms it as a subjectively identifiable category, in direct contrast to the other, more externally purposive manipulation of signs that we indulge virtually everywhere else in our lives - as, for instance, when we select particular clothing for a job interview, in the name of making a favorable impression on the prospective employer.

And that leads finally to the most important point, here: if we as humans perceive everything as sign, and if what we do as humans is relate to the world by manipulating signs to achieve whatever ends, and if art is the juggling of signs as an end in itself...then art, thus described, becomes the paradigmatic human activity.

I've been teaching this approach to understanding "art" (and, art) for long enough now, that I'm at that point we all reach where it begins to seem, at least, like little more than common sense. But lots of kids don't know this, however simple and old hat it may seem to us. And by the time they've negotiated all this theory, many of those kids find themselves relating to art in a way which for most of them is very new, and evidently very exciting/empowering...enough so, that I've been compelled of late to consider what it might be about all this that makes it so successful.

For one thing, I think, this approach offers a rationale for why it may be a good idea, why it might be relevant to anyone's experience, to pay attention to art at all. It seems to me that such a rationale is perhaps the most critical aspect of contemporary arts pedagogy. Most students today, raised in the wake of High Modern art, understandably tend to see art as foreign, and so vaguely threatening, and all-in-all little more than an academic imposition on their programs of career-preparation. The need for a rationale that counters this view, however, has been ignored, or at best glossed, in virtually every text on the subject I've ever encountered. I assume that this is the case because the inherent worth of art has been steadfastly taken as self-evident by the writers of such books, despite the fact that, as far as the readers of those books are concerned, that proposition has become less and less tenable as the 20th Century has proceeded. In any event, the Structural-cum-Formalist approach that I'm suggesting offers the student seeking some reason why she should bother with this art stuff, the clear idea that one can learn more about the experience of being human, more directly, if one does; for art's not foreign, but rather quite the other thing - described in this way, it's absolutely central to the human experience per se.

Thus fortified with at least a theoretical justification for her efforts, then, she discovers as well that this idea of art as paradigm implies generalizability - if art's a paradigm, then if you can learn to think about art, you will in doing so have learned to think about virtually any human-made phenomenon at all. That makes art a good site for the practice of thinking.

Moreover, it's a risk-free one. Again our Structural/Formalist description posits the artist as arranging signs, subjectively perceived and in a given context, into subjectively perceived relationships that are based entirely in the experience of the signs, as such themselves, with no constraint beyond that being brought to bear on the process. One can make the case for this position, incidentally, by reference to basic understandings of the creative process and its origins in the unconscious, and to apparently corroborating testimony from artists as to their optimum states-of-mind when working, most of which are ultimately described as ultimately undescribable - as, that is, pre-linguistic. Duchamp (1957), for instance, noted that, "All (the artist's) decisions in the artistic execution of the work rest with pure intuition and cannot be translated into self-analysis, spoken or written, or even thought out." Other such examples abound.

If artists then, are just intuitively "juggling" signs, as I have characterized it here, just "doing it," as the Nike ads urge, there can be no preexistent meaning intentionally encoded in the art part of a thing, for the viewer to "get" (or, to be threatened by the supposed need to get). And given that, the process of appreciating art, of criticizing it, must become essentially a creative one, precisely like that indulged by its creator. The would-be art appreciator needs to see/experience the work in question as clearly and intensely as possible; to notice what she notices about the work and her experience of it; and then to creatively make meaning of those things. The only substantive differences, in this view, between the artistic and the critical processes are a) the potential scope of the artist's purview, vs. that of the observer/critic analyzing specific works, and b) the relative degrees of conscious metacognition at either end of the encounter with the work. Neither of these directly impacts the essentially "structuring," essentially creative nature of the process.

Thus both art-making and art-criticizing become two sides of the same theoretical/experiential coin. Both, that is, becomes sites for the direct, nonreferential experience of the signs involved in a given artwork. And that's the selfsame "direct experience" that is increasingly unavailable to us as otherwise linguistic creatures. Peckham (1976), indeed, has suggested that that's precisely why art keeps getting made, and valued.

With that observation, the theoretical section of the course ends: I give a midterm essay exam aimed at determining to what extent we're all understanding these ideas at this point (and insofar as some of us are not, why). On completing that exam (and conferences re problems with it, if any), attentions turn to term papers - to putting, that is, all this theory into practice.[2] At this point, the students often panic. "Creative!!?!," they say, "Make up a meaning ourselves!!?!," they say, "Why I'm not creative, I'm a CommStudies (or whatever) major!" And here, the Structural part of the theory makes possible the observation that they've just been "creative," just had, at least in a passive/active sort of way, the very experience of which they're so shy. For the course to this point has amounted to the embodiment of its own theory. With my help, they'd discovered a problem in themselves, something they didn't understand (What does "art" mean?); they'd said in effect, "Well, if we assume that (language is human-specific)...; and then they'd built, again with my help, an understanding/argument/structure, of selected ideas and suggested relationships, from there. So, I can say in the face of their panic, "Now pick a term paper topic - a text, some artwork that raises some question for you, and do all that again (I will help you again)." And the second half of the course, now focused on pragmatics, begins.

The student comments noted in the box at the start of this paper demonstrate the kind of reaction this approach to thinking about art can elicit, in disinterested undergraduates. That it can do so is largely a matter, I think, of their not having been made much aware that they can think, or even, for that matter, that thinking is a thing that's there to do (and about art, indeed, least of all). That it does do so is, I think, a function of two other, complementary factors, and a number of pedagogical ones that build on those.

The first of those complementary factors is the whole "it's all relative and we made it all up" ethic that is at the base of the Structural view. That ethic serves to put individual responsibility for what one makes of a given situation directly in the forefront of the metacognitive description that follows from it. As far as thinking about art is concerned, it's no longer a question of "decoding" and "getting right" what the artist "must have" meant, but of thinking for oneself about what one makes of this (text) now, and of how, and from what perceived signs.

And the Structural view, I think crucially here, renders that thinking (about art) almost tangible. It suggests a straight-forward, demystified process of focusing one's attentions on a finite, hence manageable, text, and of seeking to describe aspects of one's experience of it - first, physical, observable aspects of that text, and then, one's effective/affective reactions to them. The sense of this approach is much more of one of organizing discrete entities - "signs," if you will - than of gratuitously indulging will-o'-the-wisp interpretations or stream-of-consciousness associations, which are what most students have long assumed to be the stuff of art criticism.

This "incipient tangibility," if you will, of the Structural view is a direct complement to the general cognitive capacities of undergraduates as they have recently been understood. Numerous studies (Lawson and Renner 1974, Arons 1976, Granger 1986, Adey and Shayer 1990, etc.), most made in the context of the physical sciences, have determined that large numbers of college freshman are still in the concrete operational stage of cognitive development; concrete operations seem to persist much later, that is, than Piaget's original model had suggested they might (he saw that stage as typical of seven- to eleven- or twelve-year-olds). Insofar as undergraduates are indeed engaged in concrete operations, they are unlikely to be limiting them to the labs; this cognitive level must be present, and a real pedagogical issue, in college classrooms generally. That suggests that the more literally tangible thinking in any context can be made, the more likely those undergrads will be to "get it." And that brings me finally to three gambits that I've evolved in my teaching about art that serve to capitalize on the "incipient tangibility" of this Structural/Formal approach, and so I think to make it work for as many students as it evidently does.

For one, I introduce all this by way of an evolutionary silly but pedagogically invaluable parable. In it, everything comes down to one evolutionary beastie having been the first to cross the evolutionary bridge between the experiential continuum arguably common to animals other than us, and the abstracted awareness of self-vs.-other that characterizes humankind. Faced with the sudden, startling, and no doubt threatening recognition of chaos, that beastie began to cope by subjectively identifying things it noticed as relevant, and then organizing them into perceived relationships, causal and other, and proceeding on that basis, augmenting and amending as necessary. When another beastie crossed the bridge, rudimentary language was developed as a way of passing along understandings...and in time, via the same process, so was metalanguage, with which we refer to language...and so it has presumably gone, as Langer (1957) has noted, since.

The kids seem to identify with this. It stands for them as a conceptual model not only for how we humans got to be what we are, metacognitively speaking, but also for the nature of the artistic process, as defined, and for what I claim ought to be their behavior in the face of a work of art, now - to wit (again): straining, like the beastie, against the bonds of convention, to notice; noticing carefully, even, as that beastie, "critically," what they notice; and relating those things in a way that "makes sense."

Further, I present as a generic "structure" a nonrepresentational model made from what is essentially a designer's tinker-toy (one that allows complex connections, in planes that intersect at six different angles to one another - rather than only at 90 degrees, as in the original toy). As it's presented as a generic structure, of course, this serves as a tangible model of the various constructs that arise throughout the course. It can be seen as a generic speech-act, in any "language," and/or as a language itself, or as a structural representation of an individual painting, or of the whole of Western art, etc. In it, I suggest, the white nylon "nodes" to which the ends of the variously-colored plastic sticks attach are signs, essentially arbitrary denotative elements of whatever kind. And the sticks that connect them are the conventionalized rules and/or the idiosyncratic understandings by which those nodes/signs are held in meaningful relations one with another. I can, that is, point to one "node" and identify it as, say, color field painting, and to another identified as, oh, 17th Century Dutch landscapes, and ask "What's the (relational) nature of the orange stick that connects these?"... .

Further, this model makes tangible as well, in the obvious complexity of its interconnections, two other things: first, the nonlinear nature of creative/critical thought (the model obviously exists in three dimensions); and second, the idea that the more signs one can observe in a given text, and the more relationships one can establish between them, the more "un-shakeable" the structure of the interpretation based on them will be (something that is literally true of the model).

This last is a point that is in turn critical to the defense of this approach to art. As no less an authority figure than Umberto Eco (1992) has argued, and as I know from experience, the more thoroughly the student's vision and argument are articulated, the less the chance of self-indulgent free association in response to the work, and the more one will typically approach - though rarely to any degree smacking of pedantry - conventionally-accepted interpretations. It becomes the teacher's task, in this regard, to keep pushing the student toward even-fuller accounts of the work ("But what about this?"... "If you align these this way, then what do you do with that?"...etc.).

Finally, in the students' first direct exposure to a text in terms of all this theory, I have them watch a film together, and write down as they do so anything - no self-editing allowed, as in "Oh no, that's too obvious" - that they notice as they go. I collect the rough lists, assemble them into a "master," and then, in a stratagem adapted in my case from that of the writer John McPhee, transfer each individual observation from the master onto a 3x5 Post-It note. At the next class meeting, I put those Post-Its on the wall, ask the class to do what it can to suspend its memory of the movie and to deal just with the observations as presented, and then to relate them in any way(s), on any base(s), that occur. As those relationships are suggested, I move and group the notes on the wall accordingly, and the class literally watches itself create critical themes, and simultaneously amass evidence in support of those themes, from subjectively observed aspects (signs) specific to the film/text/artwork itself. The class watches itself, that is, think - here, pointedly creatively as well as critically - about it. (And in doing so, it partakes of something very like the process of the artist, which thus begins to seem less "foreign" not only in theory but on an experiential level, and hence more generally accessible.)

Not all students do "get" this, I hasten to add. There are several each term who eke out D's, or flunk, and they are typically as resentful of the course as others are enthusiastic (see the final quote in that box, above). I realize that this may be at least in part because many of them have learning styles that do not resonate with this theoretical approach. And there are generally a few for whom Structural theory, however presented and in whatever context, is clearly insufferable old news - after the second week, they doze through what classes they do attend, and write A+ exams and wonderful papers.

But most do "get it" - my guess would be, though I've never calculated it, maybe 70%. I suspect that many do, because this course's "fit" with their level of cognitive development is so effective that it supersedes issues of learning styles, for many. And when they do "get it," students are, as noted, excited and empowered by the process. Their papers, incidentally, much reflect that. They are typically fresh, personal, and markedly more carefully-observed and thoughtfully -structured than their counterparts as I have known them in other courses. Sometimes, indeed, they're that kind of exciting that keeps us all trying, in this profession.

I could commend this approach on that basis alone, in the name of enhancing morale in the teaching profession. As far as a basis more oriented toward the students is concerned, I have both qualitative (Shipps, op. cit.) and quantitative (a lot of comments like those noted in the box) evidence of how well this works in foundation courses about art. It seems to me that it ought to work as well as an introductory component in critical thinking courses and/or curricula, where the paradigmatic practice of thinking (about art) per se could then be extrapolated into whatever other content areas and/or variations on the theme.

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* N.B.: This article will appear, in slightly edited form and under the title "About Thinking, About Art," in a forthcoming edition of The Journal of Aesthetic Education. This draft is used here with permission.

Notes:

1. A formal language, it should be noted, is atypical of structures in general in that it is linear (most others are multidimensional), prescriptive (most others are descriptive), and capable of referring directly to itself (most others cannot).

2. I ask for critical papers in this course for two reasons: because I want disinterested students - which is most of them, at least initially - to see that creativity is every bit as much the province of so-called non- (even, anti-) artists as it is of the artists themselves; and, because papers are relatively easy for me to grade coherently. (I do so, incidentally, on the basis of two interrelated criteria: how many diversified signs can be brought usefully into play, and how varied, inventive, and "elegantly structured" the relationships between them can be shown to be.) But as a colleague has pointed out, logically the "critical" responses to a given artwork, in this view, could take virtually any expressive form, and be evaluated in the same way.

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Masks and Maskmaking: Reading and Writing A Kinesthetic, Learner-Centered Approach for High-Risk Students

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Traditional academic skills - reading and writing - are often a strange puzzle for students identified as at-risk and enrolled in basic skills classes. These remedial courses attempt to fill in the gaps and chasms of twelve or more education years in one or two college semesters.

For many students, this ambitious program is painful and demoralizing as the focus emphasizes those very areas of ongoing difficulties or failure. It is important to remember that although these students are labeled "at-risk" by academic institutions ("at-risk" of failure), they are in many important ways already successful in other areas of their lives - socially, athletically, sexually.

When asked to describe a favorite childhood book, only two students out of thirteen in a recent class of mine could recall such a story. Often, these are students who were not read to as children. These are young adults who do not read for pleasure. Reading and writing are haphazard activities, difficulties compounded by the drills, exercises, and essays offered as the predominant diet in basic skills classes. Writing as a process, I noticed, seemed to be too abstract to keep these students' attention. I needed to find a backdoor for my students, ways of making the abstract accessible and concrete. I wanted to take the writing process out of the head and off the paper and bring it into their hands, as visible and tangible as possible.

In this paper, I provide an overview of one approach to working with at-risk students in a Basic Skills in Writing course. I wish to share with you seat-of-my-skirt experiences as I struggled to find ways to learn with my students. With the support and encouragement of the WAC program (Writing Across the Curriculum) at Upsala College, I taught this course in the spring semester of 1994. The class was structured with a strong emphasis on collaborative learning and with a focus on problem-solving and exploration of the *tools* of learning. These tools include not just the traditional academic skills of reading and writing, but, more specifically, the visual, aural and kinesthetic skills of the working artist. The course uses as its focus the topic of masks, from a variety of cultures. During this course students work on developing skills in three areas: drafting, writing and rewriting: looking and observing with awareness; and hands-on creative work making original masks. The goal is for students to develop an expanded toolbag of skills and techniques with which they can then navigate core curriculum courses.

Prison Studies and Cello Lessons

In his autobiography, Malcolm X eloquently describes his learning process with reading and writing. In 1946, not yet twenty-one years old, Malcolm X was sentenced to ten years in prison. It is here where he would hone his debating skills; it is prison also where he will, envious of another inmate's stock of knowledge and in answer to Bimbi's challenge, start a correspondence course and take advantage of the prison library.

> "It was because of my letters that I happened to stumble upon starting to acquire some kind of a homemade education. I became increasingly frustrated at not being able to express what I wanted to convey in letters that I wrote. . . . In the street, I had been the most articulate hustler out there - I had commanded attention when I said something. But now, trying to write simple English, I not only wasn't articulate, I wasn't even functional. . . . Many who hear me today somewhere in person, or on television, or those who read something I've said, will think I went to school far beyond the eighth grade. This impression is due entirely to my prison studies." (171)

Malcolm goes on to describe how he started reading the dictionary, just to learn words. He copied pages and pages of the dictionary into his notebooks. "I suppose it was inevitable that as my word-base broadened, I could for the first time pick up a book and read and now begin to understand what the book was saying. Anyone who has read a great deal can imagine the new world that opened." (173)

This is, in many ways, similar to much of the process described by John Holt in his musical autobiography. Having no special previous musical experience or knowledge, he wished to enter the world of music, in much the same way that Malcolm X began to want to enter the new world of which books had given him a tantalizing glimpse. So, Holt, taking up the cello at the age of forty, needs to *learn to read* - not books, but music.

> "If I could learn to play the cello well, as I thought I could, I could show by my own example that we all have greater powers than we think; that whatever we want to learn or learn to do, we probably can learn; that our lives and our possibilities are not determined and fixed by what happened to us when we were little, or by what experts say we can or cannot do." (185)

Holt's account is remarkable in its humor, sensitivity and inspiration. At one point, he discusses some of his earlier research in children's learning, the protective strategy he called *deliberate failure*. "It is easier to say 'I'm a nonspeller (or a nonsinger)' than to face the risks and possible disappointments of learning to sing or spell." (25) I noticed this seemed to be a common denominator amongst my students, who seemed to hold a mixture of both shame and pride in their poor reading and writing skills. They were determined to hold onto their image rather than to just sit down and improve their skills.

So, my task as teacher, or more accurately as *facilitator*, was to find ways to bring my students to a place where they might see themselves, in their own imaginations, with different eyes. John Holt found his way via his ears and learning to read music. Malcolm X discovered his way via social empowerment and learning to read books. For me, the best way to do this with my students, using myself as an example, was with my own experiences as an artist.

Trained as a composer, I often describe myself by saying "I am a *mud-pie* person." I learn through my hands - playing an instrument, using computers, sketching, writing. Maskmaking is - like composing, like learning - playing around with ideas and objects; some of my own favorites are kites, bubbles, toys, crayons, fingerpaints, sticks and rocks, marbles, playdoh, puppets. It is the playing around with objects in my hands that the creating, the learning, takes place - moving ideas and sounds around in my head. As an artist, in the end, it is the work that counts, but for me on my most private level, it is the process of making the mud-pie that draws me back, again and again. I do not think in words, so it is a process for me of continuously translating my thoughts into words. I work from the silence until I find the sounds or words or images I need to fill the idea. It is a confusion into which I allow myself to submerge. The process of composing, writing, drawing, learning is, for me, a process of shredding the idea down, over and over again.

Malcolm X described his learning process in the following way:

> "I have often reflected upon the new vistas that reading opened to me. I knew right there in prison that reading had changed forever the course of my life. As I see it today, the ability to read awoke inside me some long dormant craving to be mentally alive. I certainly wasn't seeking any degree, the way a college confers a status symbol upon its students. My homemade education gave me, with every additional book that I read, a little bit more sensitivity to the deafness, dumbness and blindness that was afflicting the black race in America. (179)

So, his "homegrown" prison studies brought Malcolm X to new ways of *seeing* the world around him. What was needed for my students was a similar process, but one that fit within the confines and limitations of a one-semester course in a rather ordinary college classroom. A very tall order!

The masks course required students to compile a portfolio of their new learning acquired for the duration of the semester. The portfolio is specifically developed encompassing a wide range of documentation, including but not limited to prose, journal and poetic writing, photographs, sketches and drawings, and collage. First, we "look" at a wide variety of faces - historical, cultural, animal, mythological. We then write about this "looking." A class trip to the local art museum is a requirement and an opportunity to talk more about "looking" skills. At the same time, we make a series of masks - paper, plaster, papier mache - and investigate both the process and the products. Thus, the task at hand is to develop an observant eye, an effective reporting voice, a technical hand.

During this course, students are encouraged to ask themselves questions like the following: How do I *look* at a face? How can I *learn to look* more closely at a face? How are faces similar and how are they different? From mine? From others? What does it mean to be "creative" or "artistic"?

To produce both masks and writing assignments a four-step process is used:

1) Brainstorming 2) Drafting 3) Revising 4) Final Version

Students are required to document and demonstrate each step of the process for each mask and each essay they create. We then look at how the process is different and how it is the same between the two products (masks and essays). We work on large sheets of newsprint, with crayons and markers, which are taped up on the classroom walls from week to week to, so that the evolving changes are always visible. In effect, the class ends up constructing a time-line along the walls of the classroom. The four-step process is color-coded so that it's easy to make comparisons and to show where similarities and differences occur in each student's individual process.

One student, Jenny, (students' names and identities have been changed to maintain privacy) for the first several classes was antagonistic, hostile, disruptive, refusing to contribute, complaining loudly that none of this made sense. I brought a camera into class and, with much commotion and pomp, appointed her "Class Historian." It was her assignment to capture the class in snapshots of each stage of our four-step process. This was a successful approach. In asking her to find these images, I enabled her to see each aspect of the process, helping her as well as other students. For *brainstorming*, Jenny photographed classmates in discussions about essay ideas and others making sketches for mask decorations. For *drafting*, she caught students writing in journals and making the first layer of a paper mask. For *revising*, she showed students involved in a peer review of their essay and other learners adding feathers and beads to almost completed masks. For the *final-version* step, she showed students holding typed essays and wearing decorated masks. Her peer learners ended up using many of these photographs in their individual final projects, which included construction of a four-step-process collage.

In combining their newly developing observation skills with the hands-on manual skills, students are challenged to apply a similar process to their writing skills. As they "practice" looking at and making masks, students can "practice" looking at and revising their writing pieces. It is also possible to expand the discussion from masks and various faces to *voices*, as a way to provide students with practice using appropriate writing styles.

Theory of Multiple Intelligences

It is possible that this course fits the current thinking in multiple intelligences (MI) theory. Indeed, it is only after my work in the design, development and delivery of this course that I have been introduced to the work of Howard Gardner in this area. Certainly, what is exciting and relevant about this work is how the theory of multiple intelligences can be applied in the classroom. In particular, the work of Thomas Armstrong provides strong, practical and accessible and workable ideas for classroom activities and assignments. Armstrong coined the term "paralyzing experiences" to describe experiences that "shut down" intelligences. "Paralyzing experiences are often filled with shame, guilt, fear, anger and other negative emotions that prevent our intelligences from growing and thriving." (23) It would seem that, working as an artist-teacher on an intuitive level, I began exploring wider resources from my own intelligences, searching for ways to connect with my students.

It would be interesting to explore what, if any, relationships and connections there are between Armstrong's paralyzing experiences and Holt's research in deliberate failure. I suspect that most of my students came into my class with a long history packed with extensive paralyzing experiences. It is possible that the result of such a history is the development of a coping mechanism. Perhaps deliberate failure is a protective strategy developed as a response to paralyzing experiences.

Armstrong's idea is in response to Gardner's work with "crystallizing experiences . . . the sparks that light an intelligence and start its development toward maturity." (22) These sparks are turning points in an individual's development of skills and abilities. Clearly, Malcolm X gives us strong examples of both in his lifestory as does John Holt in his musical journey. Armstrong says that MI applications "can help us develop neglected intelligences, activate underdeveloped or paralyzed intelligences, and bring well-developed intelligences to even higher levels of proficiency." (24)

Conclusions

Perhaps the most appropriate description for my experiences in this course is *connected knowing*. Connected knowing is a pedagogy examined in-depth by Belenky et al. "Authority in connected knowing rests not on power or status or certification but on commonality of experience." (118) My course evolved into a community of learners with a "student-teacher relationship of reciprocal care, built around a common concern for work." (127) The traditional roles merged as we discussed writing and mask-making, both the products and the processes. It became clear that these students need care and attention along with their academic assignments and skills development.

Several students surprised me with their enthusiasm and initiative in proposing, organizing and conducting a maskmaking workshop for the rest of the college for the annual Community Day held at Upsala every spring. Please remember these are students labeled "Basic Skills Needed." The class hung a small exhibit of their masks, collages, sketches and essays for students, staff and faculty to enjoy while waiting to make paper or plaster masks during the workshop. Here and there, I heard students explaining their new buzzwords - Brainstorm, Draft, Revise, Final-Version.

As I become more knowledgeable about MI theory and its applications, it is interesting to sift back through my teaching and learning to see how MI fits in with my own experiences. For students who made strides in this mask course, I can see that there were several crystallizing experiences for them during the semester. These were most often in the hands-on workshops, occasionally during class discussions, and least often in the writing assignments. Perhaps this reflects my own strong preferences as a kinesthetic learner. As the semester progressed, more and more students, about half of the class, were able to make the connection to the writing.

During the semester, I began to realize the importance of race as a factor. As a white professor, I am aware of the gulf that exists in a class which is made up entirely of African American students as this one was. As a facilitator, I try to bridge the gap by sharing my own experiences as the daughter of a first-generation Portuguese college graduate, knowing that the experiences are in no way analogous.

Although this was not a research project, it is important to note, even if only anecdotally, the results of the course. Out of a class of thirteen, six women and seven men, four students (three female and one male) were able to make these connections on their own with minimal supervision. An additional two female students, with continual pushing and prodding, were able to produce an acceptable portfolio. The remaining seven students - six males and one female - 50% of the class, made little effort or improvement, even with extensive supervision. In the future, I would like to find ways to incorporate more structures that specifically address gender issues in learning. However, I was pleased with the quality of class discussions, exploring questions about images of women and images of men, as we observed diverse masks from different cultures. I believe there is much more I can do along these lines. For future work with this course, my plan is to structure it around the three basic concepts as discussed in this paper.

- Facilitating the course to develop its own community so that the overall approach is one supporting *connected knowing*, emphasizing relationships of reciprocal care and concern for people and their work.

- Approaching students with the understanding of *deliberate failure* and finding ways to challenge them to re-invent their own image as successful learners.

- Designing as many *crystallizing experiences* as possible as part of this classwork.

An unplanned outcome of this course has been important learning for me. I have been making masks for over fifteen years and I realized that perhaps I had come to take this kinesthetic process for granted. As a maskmaker, I have conducted numerous maskmaking workshops with a diverse range of participants. In making plaster masks, I use Vaseline to coat the person's face entirely to protect the skin from the drying plaster. It is somewhat similar to the plaster used for casts made for broken arms or legs. For this class, I asked for volunteers so I could demonstrate techniques for constructing the mask. Working in groups of two or three, everyone would have the opportunity to learn how to make a mask on someone else's face and then to have a mask made of their own face. From years of experience as a maskmaker, I have learned to sense when someone does not want their face touched and so I always offer the option to make a mask of hands, if that is preferable. I have learned that, whether from hands or faces, there is much knowledge exchanged in the touching.

Clearly, for this class, the touching was very important. As I worked with the first student volunteer, Joe, placing each strip of plaster gauze on his face, layer after layer, the traditional academic teacher-student relationship was changed somehow. A combination of trust, warmth, acceptance, and affection was established in minutes for all students as they observed me working on Joe's face. It was both unspoken and electrifying. I felt all this immediately as well as my own surprise. As I completed that first mask, I simply took my cues from my students. They seemed as astonished as I and just as open and welcome to the attention. In fact, they were parched for the touching. In that moment, I realized the distance these students normally feel from their teachers is not a gap but a chasm! How eager they were to make masks of each other and how special I felt when they demanded to make my mask! In a few seconds, they had been given permission to touch the teacher's face, my skin as well as my heart, as they had sat for me while I touched theirs. With these students, I began to see how terribly important it is to flip the power dynamics in the student-teacher relationship. By breaking down the boundaries that are a part of traditional academic pedagogy, my students and I were able to reach beyond the barriers to their learning and development. I now understand that the knowledge I had learned years before about my own process - that I need to touch people's faces in order to know them, to connect with them as an artist and as an individual - had a very important place here for these students who had so much depending on their learning. In flipping the power dynamics, by sharing the responsibility for making the masks, these learners were empowered and encouraged to continue their learning in the face of risks, possible disappointments, and ongoing struggles.

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Learning to Make Plaster Hand Masks

Hand Mask

Making Face Mask

Plaster Mask Drying

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Less is More: Applying Caleb Gattegno's "Words in Color" to Language and Literacy Learning on the College Level

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Caleb Gattegno (1911-88) spent his formative years in Alexandria, Egypt and exemplified the multilingual, multicultural, and polymathic individual who emerges at the margin of empires in decay, as often described in the now fashionable concepts of "cultural borderlands" and "contact zones." Leaving an academic career in England, when he perceived that a university department of education was less than fertile ground for pursuing his own vision of teaching and learning, he spent the last twenty years of his life as an educational innovator and entrepreneur based in New York. The company which he founded, Educational Solutions, Inc., still exists as a source for his books and the innovative and unique educational materials which he invented.

Gattegno's approaches to mathematics, literacy and languages were applied in many schools during the 1960s by enthusiastic adherents with the support of forward-looking educational administrators as well as corporate sponsors such as Xerox and Encyclopedia Britannica. They are still current among a small coterie throughout the world, particularly in France, Japan, the U. K. and the U. S. Unlike many current innovations in education, which employ approaches based on the convergence of entertainment technologies with the content of traditional education, the Gattegno approach uses simple, inexpensive materials to challenge learners on any level.

Gattegno's epistemological and methodological writings are extensive, and observations of his teaching practice by John Holt, James Moffet and Mina Shaughnessy, as well as many less well-known educators particularly in the domains of mathematics and foreign language learning, comprise a considerable literature. It is perhaps sufficient here to note that Gattegno grounded his epistemology in observation of that most universal and successful example of learning without teaching: the baby whom each of us has been and continues to carry within himself or herself.

As a practical educator, Gattegno set himself the task of developing approaches to "school subjects" which artificially recreate the situation of babies, autonomous learners guided by their own sense of truth, need to know, and self-developed mental tools. His techniques and technologies, which incorporated many instrumentalities ranging from wooden manipulatives (he was an early champion of the use of Cuisenaire rods for both mathematics and language learning) to books, wall charts and computer disks, are all examples of what he called "The Subordination of Teaching to Learning," in that learners are given only what they must receive from outside, what they cannot possibly intuit or invent for themselves using the powers which every baby uses to master the somatic and mental demands of living in the world as it is.

In 1970, Gattegno was invited by The City University of New York to conduct teacher training seminars for faculty in mathematics, writing and reading as the University was initiating its "open admissions" policy. Although Gattegno's suggestions for pursuing this experiment were never widely adopted within CUNY, some of the faculty members who attended those workshops (or others which Gattegno conducted at around the same time) have continued their interest in his work until the present.

"Words in Color," Gattegno's approach to reading for native speakers of English (similar materials exist for native speakers of most European languages, several Native American languages and some Asian languages) makes use of charts on which each English sound with its variant spellings is represented by a different color. Due to the prominence of these charts in Gattegno's approach to literacy, "Words in Color" is generally dismissed in the professional literature as an exotic version of "phonics," a characterization which neglects many of its distinctive features, features which transcend the conventional division between "phonic" and "whole language" approaches. However, rather than attempting to describe and defend the use of Gattegno's technology and approach over all (which, in any case, would be impossible within the short time we had available) we used the balance of our time in this presentation (as promised in the conference brochure) to conduct a "participatory workshop" in which those present were "invited to engage in, and reflect upon, hands-on activities which illustrate Gattegno's principle of 'The Subordination of Teaching to Learning'—giving as little as possible to the learners so that they can do more."

To the very limited extent that it is possible to convey the character of a workshop presentation which must be "lived" to be understood, we will try to narrate what occurred in the workshop we gave at the November 1994 Conference:

First, Rose Ortiz dictated a long and rather complex sentence which each of the members of the group attempted to transcribe accurately. Further, the dictation was given only once, with no words repeated. Subsequently, the group struggled — collectively and collaboratively—to get the entire sentence up on the chalkboard, with each word spelled correctly. As they worked together, several individuals spontaneously identified themselves as "problem spellers." One woman also self-identified herself as hearing impaired. Rose then asked her whether she had transcribed the sentence or any portion of it. The woman replied that she had, but did not feel sure that she had spelled the words correctly. Rose handed her the chalk, as a way to invite her to write her rendition of the sentence on the board. After she had done so, Rose asked her whether she wanted to make any changes. When the woman said that she had done all she could do, Rose invited others to make substitutions and additions to any portion of the sentence.

Throughout the entire exercise, Rose kept a "poker face," so that participants would be moved to scrutinize the sentence rather than her expressions. She then handed the chalk to those who showed an interest in making revisions. As members of the group made changes, some were corrections and some were new mistakes Rose, saying nothing, handed back the chalk, giving participants a chance to correct themselves. Among those who did were people who smiled at their own carelessness and appreciated having a second chance.

Eventually, the entire sentence was correctly transcribed on the board: **Did the sleuth discover whose gruesome lieutenant threw two shoes, a suit, a flute and some soup through the zoo keeper's window?**

Next, Rose drew lines creating twelve columns, each headed by a word from the sentence serving as an example of one of the twelve spellings of the sound "oo," as in "too." By handing out more chalk, Rose invited participants to fill each of the columns with words containing the same sound and spelling of "oo" as the word at the top. As people filled the columns, those watching discussed among themselves whether the words belonged where they were put, and whether they were correctly spelled. Again, Rose offered little feedback and only when necessary so that the group had to reach agreement through extensive discussion and even argument, with all appeals to the "teacher" eliciting a non-committal, if smiling response.

There was a buzz of talk with people saying words and parts of words, while listening to themselves. Even the woman who was hearing-impaired used her ears to decide what words belonged in which columns.

The following is a sample of what was written on the board:

whose	gruesome	threw	flute	zookeeper's
to	blue	knew	tune	too
who	clue	grew	flu	cool
		brew		room

Following this activity, Peter Miller invited the participants to write "haiku" (poems of three lines in which the first and third line consist of five syllables and the second line of seven syllables) confined as much as possible to additional examples of words containing the same sounds and spellings that had been observed in the dictated sentence and placed in the columns on the board. In this way, immediate practical use was made of the group's observations about sounds and spellings. The resulting poems were read aloud and shared within the group.

Feedback followed the succession of activities, with participants noting several salient points of the "teaching" throughout the workshop. For example, the instructor had never provided any praise or "reinforcement" to the learners, so that they were forced to develop their own criteria and inner conviction for when they were "right," rather than relying on the teacher's authority. They also noted that variations in age, ethnicity, social and educational background, etc. within the group had seemed irrelevant for the duration of the exercise. Everyone had worked together on the same basis and with the same balance of attention to each individual learner and reluctance to "tell." Several people speculated about what this might suggest about the need for the teacher to be an information provider or to base instruction on the students' personal and social profiles.

Another aspect of the exercises which struck participants was that while they had been totally devoid of entertainment content and/or "motivation," everyone in the room had nevertheless participated actively. Given this experience, some people wondered about the extent to which the current convergence of entertainment technologies with traditional academic content is necessary or even valid.

As the workshop ended, all of us—presenters and participants alike—appeared to be leaving with more questions than answers. The very little which had been provided had mobilized powers within each of us so that we left feeling more energized than when we entered the room. Less seemed to have truly produced more.

A Short List of Passages from Caleb Gattegno's Works of Special Interest to Teachers of Reading and Writing

The Common Sense of Teaching Reading and Writing. New York: Educational Solutions, 1985. See especially: "From Meanings to Words and from Words to Signs," 36-53; "The Act of Reading and the Discipline of Reading," 57-64; "The Various Meanings of Reading," 176-230; "Part IV: Writing," 233-276; "Spelling," 139-175; Appendix B: "List of Materials," 286-289.

The Common Sense of Teaching Foreign Languages. New York: Educational Solutions, 1976. See especially: "Freeing the Students," 1-14; "Independence, Autonomy and Responsibility," 45-55.

In the Beginning There Were No Words: The Universe of Babies. New York: Educational Solutions, 1973. See especially: "Ch. 5: Talking;" "Ch. 6: Speaking."

"The Problem of Reading is Solved." Harvard Educational Review 40:2 (1970): 283-6.

Toward A Visual Culture: Educating Through Television. New York: Outerbridge and Dienstrey, 1969.

Teaching Reading with Words in Color: A Scientific Study of the Problems of Reading. New York: Educational Solutions, 1968. See especially: "Meeting the Sounds of English," 55-102; "Meeting Spellings," 103-126.

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Cultivating Multiple Intelligences Through *The Living Journal*

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Journal writing is not just for composition classes any more. As a result of new directions in the study of language and rhetoric over the past twenty-five years, growing numbers of educators have been unleashing the unique power of writing not only for self-expression and communication but also for learning and creating. Journal writing is emerging as a powerful, effective, flexible, and inexpensive educational technology accessible to most students, whatever their backgrounds and capacities.

In 1970, the *Education Index* listed only two articles on the use of journals in education, both of them in postsecondary contexts. By 1980, ten such articles were published, four of them postsecondary. In 1990, the total number of articles devoted to classroom journaling was twenty-six, nine of which dealt with journals in postsecondary settings. By 1992, the number had risen to forty-two, with twenty-five of these devoted to the use of journals in the college classroom.

These articles reveal that teachers use journals in classrooms from kindergarten (Brock and Green 1992) to graduate school (Enns 1993), in domains ranging from anthropology (Segal 1990), art (Murdick and Grinstead 1992), business (Hilton 1989), engineering (Wilcox 1983), foreign languages (Popkin 1985), geology (Stanesco 1991), nursing (Brown and Sorrell 1993), organic chemistry (Viola, McGuinness, and Donovan 1993), mathematics (Vukovich 1985), sociology (Wagenaar 1984), teacher education (Zacharias 1991), music (Ameigh 1993), and psychology (Jolley and Mitchell 1990). Study of the journal as a tool and a genre in its own right is also making significant contributions to women's studies (Gannett 1992). Clearly, journal writing can cultivate multiple intelligences.

By 1986, my own ideas and methods for unleashing the unique power of writing had begun to coalesce into the simple structure and systematic method of the *Living Journal* (Koontz 1986, 1991). Since then, its applications across multiple intelligences have become apparent. *Journal* writing naturally cultivates ease and flexibility with language, or linguistic intelligence. As the articles above indicate, specific journal exercises can focus on cultivation of the musical, visual-spatial, logical-mathematical, and bodily-kinesthetic intelligences, as well (See Gardner, 1983, 1993 for a delineation of seven intelligences).

Most notably, however, the *Living Journal* can awaken, evoke, and integrate intrapersonal and interpersonal intelligences, thus forwarding self-appropriation, self-making, and self-transcendence which constitute spirituality. It can provide a place and a way for using the written word as a primary or secondary mode in the cultivation of any one of the seven intelligences, while at the same time maintaining balance and integrating that intelligence into the whole personality. In the *Living Journal*, exercise of all the intelligences flows from spirituality and returns to it.

The following sketch offers an introduction to the physical design, orientation, atmosphere, attitudes, and techniques of the *Living Journal*. This framework can then lend itself to application across multiple domains and the incorporation of numerous techniques.

The physical design of the *Living Journal* consists of a three-ring binder with a sheaf of loose leaf paper in the front and an alphabetical index at the back. The binder can be of whatever size and quality is most comfortable and convenient. An 8 1/2 by 11 inch binder is readily available and inexpensive. A 5 1/2 by 8 1/2 inch binder, while less easily obtained and more expensive, is also more portable and less cumbersome. The paper is prepared for writing by drawing a vertical line parallel to the outside edge of each page and about an inch or two from it, creating two columns of unequal width. Journal entries are made in the inner, wider column, while keywords are noted in the narrow, outer column, called the "Keyword Margin." Pages are numbered consecutively at the bottom.

Once we have prepared our notebook, we can make the first two of the six basic moves of the *Living Journal*: (1) establishing an atmosphere of depth and (2) focusing, jotting, and brainstreaming. Each of the other four basic moves — (3) keywording and responding, (4) indexing and responding, (5) clustering, and (6) deciding — flows in turn out of these first two moves.

MOVE I: ESTABLISHING AN ATMOSPHERE OF DEPTH

We begin by turning to the first page of the packet of loose leaf paper and making note in the narrow, outer column (the Keyword Margin) of the date, time, and place of our writing. Then we take a few moments to relax and center ourselves by letting go of the tensions in our minds and bodies and paying attention to our breathing. Relaxing and centering help to deepen the atmosphere in which we write. Relaxing, we turn off the censor or monitor that operates in our critical mind. At the same time, we are awake enough to make note of the flow of our thoughts and feelings. Centering, we place ourselves in a position to be drawn into the fringe of consciousness which is the gateway to the springs of creativity beyond our conscious control.

Obviously, writing not under the writer's control is very private, and the writer's privacy must be respected. The nature of the work militates against anyone other than the writer reading it, let alone "correcting" it for grammatical errors. Students can, however, be asked to write and submit reflections on their journal work because such reflections are subject to their conscious control. Periodic reflections intended for an audience other than themselves can also facilitate the integration process and enhance students' awareness of the direction of their journal work.

A second caution is in order: journal writing should not be forced. Should a student find her writing unsettling or uncomfortable, she should be guided to appropriate assistance. Where journal writing is a course requirement, an alternative assignment should be available in the rare case where a student is unable to fulfill the requirement.

MOVE II: FOCUSING, JOTTING, AND BRAINSTREAMING

Our minds are unique and fluid storehouses of ideas, images, memories, feelings, and questions that are the residue and fruit of experience and the source of future creations. Gathering some of these riches is the purpose of focusing, jotting, and brainstreaming.

When we feel ready, we focus ourselves in the present moment by completing the clause, "At the moment I find myself" and adding whatever comes spontaneously to mind, without judgment, analysis, or criticism. We write this brief focusing statement in the wide, inner column of the first page of our notebook. For example:

> At the moment, I find myself feeling a little unsure about this work. I don't know if I am doing it right and don't see what good it will do. At the moment, I find myself thinking that things are very confused in my life right now — hope I can find something to write about.

Such simple statements as these make us aware of the present moment of our lives and orient us to an open, honest, and gentle acknowledgment of what is presently moving within us. Such an orientation to the truth of our lives is the *sine qua non* for journal work.

Once we are focused in the present moment, we continue jotting down whatever thoughts, feelings, questions, images, and other contents of our consciousness we become aware of, just as they come, without judging or filtering anything out. If one of our jottings begins to take off, we follow it, perhaps writing a paragraph or a whole stream of paragraphs. We do not stop to think because stopping to think about what we are writing takes us out of the flow of our consciousness. Nor do we try not to think about what we are writing. We do not write what we think we should write. We just write whatever we actually find ourselves feeling, thinking, wondering, and so on at the moment we are writing: we descend into the flow of our consciousness and scoop up some of the contents of that flow.

At some point, we may find our writing streaming out as we explore some issue that concerns us or recall some experience or event that touched strong emotions within us. We may find ourselves recording our anticipation or anxiety about some event before us or recording a dream that we had the night before. Whatever comes to our awareness, we write down as freely, honestly, straightforwardly, accurately, and boldly as we can, just "telling it like it is." We do not censor whatever we find to be moving in us or try to force it into a preconceived form. We do not criticize what we are writing, analyze its causes, or judge it to be good or bad, helpful or not. We do not stop the flow to deliberate over correct spelling, punctuation, or grammar. For as long as we do so spontaneously, we continue to record whatever is moving within us, in whatever order it comes to us, with whatever brevity or fullness it comes.

When the flow of writing spontaneously ceases, we make note of how we felt during the flow. Did we feel free and easy, or did we feel we were forcing it? Did we feel angry or sad? happy? peaceful? Were we controlling what we wrote, or was our writing flowing outside our control? However we felt, we add that to our brainstreaming. Then we bring our journal session to closure by writing a brief closing statement. We may also find ourselves jotting down a "To Do List" orienting ourselves to the rest of our day's activities and responsibilities.

Once we have become comfortable with this simple jotting and brainstreaming, we can add numerous other techniques for evoking material. Especially fruitful is the technique of dialogue in which we enter into conversation with some aspect of our experience with which we are in relationship. Entering into a dialogue with a specific creative work, for example, can help us to find new energy and a sense of direction for the project, whatever the domain. In such a dialogue, we actually talk to the work and let it talk to us. Through dialogue we can reduce stress, work through blockages, and clarify what we are trying to do. We can enlist the aid of the work itself in bringing it to fruition by asking it what it wants to become and how we can nurture it (See Progoff 1992 for an extended discussion of such dialogue.)

MOVE III: KEYWORDING AND RESPONDING

In this third move, we keyword and respond to what we have written during a period of focusing, jotting, and brainstreaming. If we have time and energy, we can do this keywording and responding immediately after the second move and before drawing our journal session to closure. Or we can do it later in the day or perhaps after several days' journaling. We experiment with whatever rhythm and timing of the moves seems best for us.

Before we begin keywording and responding, we open our journal to wherever we left off focusing, jotting, and brainstreaming. On that page we write the heading "Keywording Response," noting the date in the Keyword Margin. Then we read over whatever we have written, from the brief focusing statement, through the jottings and brainstreaming to the notation of our feelings and closing statement. As we read, we pay close attention to two things simultaneously: key words that spontaneously occur to us as we read and whatever new awarenesses are stirred in us.

A keyword is a word or short phrase that comes to mind spontaneously and intuitively as we read what we have written. It is usually a noun or phrase, for example, the name of a person we have written about or a feeling, such as anger. If we wrote of a dream, a keyword might simply be "dream." Perhaps we were writing about an issue that concerns us, such as drug abuse or nonviolence. If we were describing a memory or an experience, we might summarize it in a word or two.

In keywording, we are not trying to determine a logical category for what we have written. We are not trying to determine just where to file what we have written so that someone other than ourselves will be able to retrieve it. Nor are we deliberately thinking about what we have written or limiting ourselves to a single keyword. We do not try to figure out what an appropriate keyword might be. We just let keywords come to us spontaneously as we read. If several come to us, we write them all down in the Keyword Margin. If none comes, that is all right, too. We just keep on reading and making note of whatever keywords spontaneously arise in our awareness.

While we read and keyword, we also pay attention simultaneously to our inner movements, our response to what we are reading. As we find ourselves becoming aware of new thoughts, feelings, memories, or images being stirred in us as we read, we write these new stirrings under the heading, "Keywording Response" which we have written at the end of our last journaling session. We also make note of what triggered the response so that we can trace the train of initial writing and response, if we later wish to do so.

In recording this response, we follow the same guidelines as in brainstreaming: we do not judge, criticize, censor, filter, or analyze what comes to us. We simply acknowledge whatever is touching us, attracting our attention, or moving within us, as freely, gently, and honestly as we can.

Sometimes we may find ourselves resisting a particular bit of response, but the response may continue to tug at our attention even after we have moved on in our reading. Such resistance is a good indication that we should interrupt our reading and record the response we have been resisting. At the same time, we need not be compulsive about recording our response nor exhaust ourselves nor spend undue time at our journal work. We just do the best we can in the time we have to keyword what we have written and to record our response to it.

Sometimes this response confirms the truth of something that had come forward in the brainstreaming, or it gives us a new insight into something and helps us to understand it better. Sometimes we will find ourselves exploring the significance of some item that has appeared in our brainstreaming. We may also find a chain of questions rising spontaneously within us as we read. If so, we let the questions flow out on the paper without deliberately thinking about them or without judging them. If we are faithful to journal brainstreaming, keywording, and responding, we will find that over time our questions will become more precise and better focused. We will also find that important questions are "seeded" in us and approaches and answers to these questions will spontaneously rise within us at a later time.

We may also find ourselves just naturally expanding or extending a dream that we have recorded during the brainstreaming session. Without our trying to figure it out or interpret it, the dream unfolds some of its meaning. Or we may find that an image or a sense of some creative project takes hold of us and energizes us to explore its possibilities through whatever medium is appropriate. We may find ourselves sketching a design for a painting or working out the movements of a dance or planning a program of practice on a musical instrument. With this move it is as if we throw out our net in a second pass over our inner waters. The net sinks slightly deeper than it did during our initial brainstreaming and picks up bits and pieces of material from a deeper level of our inner stream. When we have completed this keywording and responding to all our journal brainstreaming to date, we are ready for the next move, indexing and responding.

MOVE IV: INDEXING AND RESPONDING

With Moves I through III — establishing an atmosphere of depth; focusing, jotting, and brainstreaming; and keywording and responding — we have evoked what is presently moving within us, acknowledged and named its presence, and penetrated still deeper to pull up more material associated with the contents of our brainstreaming or previously blocked by debris. We probably have a number of pages of journal writing with numerous keywords in the outer margin of the pages. Now we can index those keywords.

To begin indexing, we go back to the beginning of our keywording and copy each keyword into the index under the appropriate letter of the alphabet at the back of our journal, along with the page number where it occurs. If a keyword recurs a second, third, or fourth time, we simply add the page number to the keyword already noted in the index.

As we do this copying of keywords, we pay attention to any new stirrings evoked or stimulated as we index. We write these new stirrings under the heading "Indexing Response," which we put on the page where we last wrote in our journal. When we feel touched or moved, we return to this page and brainstream whatever is moving within us. For future reference, we write the keyword that evoked the response as a heading for our response entry. As we copy a keyword into the index, we put a check mark beside it in the keyword margin. If we are interrupted in our indexing or fall behind in it, we will then know where we left off indexing next time we return to it.

Next we copy into the index each keyword that appears in the keyword margin and note the page on which that keyword appears. If the keyword is "creativity," for example, we copy the word "creativity" into the index behind the letter *C*, also noting the page number where the keyword appears. If a keyword is repeated, we simply add the number of the page where it reoccurs after the word in the index. The keyword "creativity," then, might have numerous page numbers after it. As we do this copying, we also remain alert to new stirrings evoked within us and add these to our journal, just as we did while keywording.

MOVE V: CLUSTERING

To the extent that we are faithful to Moves III and IV, we will become more aware that the contents of our consciousness not only move within us but they also tend to gather and cluster. We will find that some of our keywords come up again and again in our journal work or that many of our keywords, though different, connect with one another and bear on the same issue. For example, we may find ourselves returning again and again in our brainstreaming to a particular memory, problem, question, truth, or image. Thus we have a cluster of page numbers recorded after the keyword in our index that names that memory, problem, question, truth, or image.

A cluster of entries around the same keyword — or different but related keywords — indicates that something within us is seeking expression, attention, or expansion. The indexing of our keywords calls our attention to the natural process of ordering and integration going on within us. Indexing also helps to build energy and accelerate the integration process. If we are alert to our inner movements, we will feel the energy that is building as the bits and pieces of an idea or an issue rise to the surface and begin to gather in our daily journal work.

In keywording, we become more aware of the bits and pieces of experience, memory, imagery, thought, and feeling that are constantly flowing through our minds. In indexing those keywords, we become more aware of which bits and pieces are attracted to one another in clusters.

VI: DECIDING

The clusters in our journal provide a clear indication of what really interests us, what really matters to us, and what creative works our gifts and circumstances are calling us to do. When we are aware of where our energies are concentrating, we are in a position to make more intelligent and authentic decisions about where to focus our attention. We may decide, for example, to gather all our writings on a given cluster then organize, revise, and develop that cluster into a polished piece of writing. Or we may see that a given cluster is crying out for expression in some medium other than words, some action for social justice, some change in our life's direction, or a renewed and more intelligent commitment to a path we have already chosen.

Fidelity to the orientation, atmosphere, attitudes, and techniques of the *Living Journal* briefly sketched here can help us to gain access to the flow of experiences, memories, images, and questions which are the stuff of life; to focus our energy appropriately and effectively; to restore, preserve, and strengthen our integrity; and to maintain our balance in the chaos and flux of modern life.

Such fidelity can help to generate and clarify the three things we need to be creative, whatever the domain: vision, energy, and a sense of direction. In essence, such fidelity can help us to cultivate that habit of art which utilizes the unique power of writing to help us make artworks of our own lives and, in the process, create those artifacts which constitute our most authentic contributions to the evolution of the planet. Such fidelity can help to unleash the deepest springs of healing and creativity in the universe.

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CREATIVITY ENHANCES LEARNING IN COLLEGE CLASSES:

The Importance of Artists and Poets

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Creativity may be seen as one of the most needed skills for humankind in the present complex society. In the global community of the 21st century, it may well be the most critical skill. The wealth of the nations of the next century will not be gold or raw materials; it will be the creativity of people in the form of ideas, innovations, and yet to be seen inventions (Warshofsky, 1994). David Lazear (1991) quotes Albert Einstein as saying that "Creativity is more important than intelligence." This premise has governed the attempt to use creativity to enhance learning in college courses that the author of this paper teaches. In particular, the goal of emphasizing creativity enabled students to move beyond regurgitating facts and information. The focus on opportunities to take risks and be creative seems to enable students to practice the ability to synthesize, apply, and evaluate information and theories they are learning.

The study described in this paper was done to better understand creativity and creative visioning involving the ability to put things together in new ways. Flowing from the points of this study, the author focuses on creative applications and approaches. These are based on personal experiences with courses in education and psychology. It is the author's contention that "creative visioning" is an important aspect of being human and should be a key process in learning in most educational settings. This article summarizes the key points of the study and discusses the application of those points within college classes.

An Overview

Who can forget the look of wonder that dawns when a child makes a leap, a connection? This ability to make connections is an integral part of being human, an important part of living. In the education of young children, there is an opportunity for visioning that touches both learner and teacher. At this developmental level, there are many surprises and great leaps in understanding are made. While perhaps most evident with young children, this ability, best called "creative visioning," was the focus of a study that was rooted in a deep sense that this is a critical ability for all people whatever their age (Cromwell, 1988).

A definition of creative visioning is critical and sets the stage for further discussions including ones related to classroom practices. Naturally, it is not easily defined; a distilled, synthesized description of it would seem to be that it is a process based in a deep sense of knowing, enabling one to sense new possibilities, dimensions, and connections. This sense of a process was present in the interviews and woven into the fabric of the description of the process throughout the interviews. Strongly present in the literature (Cromwell, 1988, Sternberg, 1988, Gardner, 1993) and even more powerfully in the stories and words of those interviewed was the sense that creative visioning was critically important for every person and, perhaps, even to the future of the world.

A naturalistic inquiry model was used to interview 20 people in the Seattle, Washington area. The study began with a few highly respected individuals who recommended the additional interviewees because they perceived them as being very creative individuals. Those interviewed were authors, poets, community action leaders, actors, dancers, and business leaders. Each was involved in creativity or creative visioning and could provide some "product" as evidence, although that was not a major criteria. These individuals discussed creativity as it touches their lives, and from that information came a synthesis. The heart of the synthesis was a poem and story that attempted to describe the process of creative visioning. The synthesis - a tapestry of creative visioning - was woven together based on the central threads or themes as they emerged from the interviews. The meaning of creative visioning was based on the themes of trusting, imagination, spirituality, connections, intensity, courage, and mysticism. These main threads helped to fully define and describe this important process and were enriched by a discussion of enablers as well as blocks to creativity. The themes and the enablers have much to do with education and instructional strategies at all levels.

The Threads of the Tapestry of Creative Visioning

Flowing from this sense of creative visioning were specific threads or themes. They emerged from the conversations and were clarified as the interviews progressed. Key to creative visioning was a sense of knowing based on the important thread of trusting. This theme touched into the need to trust the self - especially to trust one's ability to know in a different way through intuition. And yet, this trust was more than intuition; it involved a sense of knowing that included intuition yet moved beyond intuition and logic. It moved into trusting the body's knowing that included reason, logic, intuition and something more - not easily put in a box or into words. What was clear in the interviews was that trusting this sense was key to the process of creativity and creative visioning.

Emerging from intuition and perhaps as important came the threads of imagination and the ability to see connections not often seen. The sense of knowing that trusts intuition depends on an ability to imagine. It is a thread that calls to existence and pulls together play, pretending, visioning and the ability to see, feel, and sense in the mind's eye new possibilities or connections. This touching of intuition and imagination easily led to more connections. All participants spoke of the importance of making connections to see relationships not readily apparent. It is through playful wondering or using the imagination that new relationships and new connections are made that enable new visions to be seen.

This new vision brings the person to a place frequently at odds with the norm. This brings up the next threads which were intensity and courage. Being "on the edge" seemed to bring about an intensity of living that was seen in a person much involved in every aspect of daily life. They would actively seek new experiences, new visions, new connections in all parts of their lives, frequently mixing various aspects of work, family, hobbies, joys, and hurts. This activity called for great risk taking and demanded personal courage. Everyone interviewed said that fear was the greatest block to creative visioning and this reiterated the need for courage. This type of courage is sometimes unnoticed and quiet and at other times loudly spoken, but always involved the strength to be different, to be at odds, and sometimes to be ridiculed. It takes a great courage to be alone with a vision and connections and to move to new heights as yet unseen by others. This demands respect, nurturing, and admiration. It demands the same admiration as the courage of a mother to raise a child.

This sense of knowing that enables the process of creative visioning touches intuition and imagination and requires trust, intensity and courage. It flows from a deeply centered touching that enables the person to see new possibilities and connections. This deeply centered sense leads to the final thread or theme - spiritualism/mysticism. This is a shimmering thread that surprises and causes awe for all who have experienced it, as well as for those who have not, but long to have the chance. It calls to mind E. Paul Torrance when he spoke of a creativity that transcends the boundaries of deliberate rational process - a creativity that communicates an instant sense of oneness with all the parts (Torrance and Hall, 1980). This is the spiritual aspect of creative visioning or a sense of mystery involved in creativity. This sense of mystery comes because of the deepness of "the knowing" involved. Alex Osborn (1953) known as the father of the problem solving brainstorming technique and one of the pioneers of this field, called creativity a process as mystical as life itself.

In the study, each of the interviewees described a sense of mystery and awe and spoke of the process as mystical. The deeper one experiences and knows life, the more profound the process and the more profound the connection and possibilities that could be seen. This is not magic but rather an intuitive sense that comes from a descent into the depths of life and self. It is there, touching the core of life, that this ability of creative visioning most gives birth to expression and insight. It almost becomes an imperative when this kind of knowing is experienced. It is no wonder that one interviewee called this process "incarnational creativity" - a process of bringing this sense of knowing, deeply centered in the person, into reality It is a process that experiences new insights, new consciousness, and new connections, a process forever on the edge.

It is in this rich tapestry of creative visioning, in this descriptive synthesis, that there was an element tied to this last thread that spoke of a "dawning of a newness." It is not yet strong enough to stand on its own, nor defined enough even to have the language necessary to fully describe it. This element of newness touches a wonderful sense of creative visioning which is the sense of becoming communal and relational. This may well become the most important insight of this study. Mutuality, communalism and collective consciousness are already hinted at in some fields and disciplines (Cromwell, 1988, Belenky, 1986, Warshofsky, 1994).

The call for collaboration in education, quality circles, team management, and common missions in business and leadership touches this sense of community. This call and shift may be seen in the discussions of Belenky's (1986) and Gilligan's (1982) works. These researchers not only break new ground but also stress mutuality, connectiveness, and an ethic of caring that is clearly tied to this same sense of community found in discussions regarding creativity and creative visioning. The sense of something new was present - a sense of a collective, relational creative visioning and as one interviewee stated, "the coming of a new paradigm." This new element enmeshed in this thread of the spiritualism/ mysticism as part of creative visioning provides an intriguing glimpse - perhaps it is the dawning of a new day.

The Needed Implications

The bright light revealed by the 20 people in this study intensely centered on the importance of creative visioning. The implications are simple and represent a profound reality. Creative visioning is needed - the implication is that everyone needs to do all that they can to nurture and support it first in oneself and then in others. The people interviewed indicated a need for creativity that moved beyond expanding the basics, broadening the scope of a field or discovering new insights; it moved to an understanding of the need for creative visioning for the very existence of the world, for an emerging communal sense of creating together, and for a deep sense of connection to the most profound part of creativity - the sacred. From the 20 voices rose a single strong voice yearning for support for open social systems that are flexible and where discoveries and delight are encouraged and praised. These would be defined as systems that are not bound by rules nor restrictive of human potential, but instead would nurture the self discipline, skills and familiarity with history that enable such connections to be made.

Beyond this implication that is personal and universal, there is a specific implication for leaders and especially schools. Leaders must take chances to create and help make environments where mutuality and collective creative visioning can exist. With some bitterness, but not hatred, administrators were discussed in the interviews. The administrators discussed were seen as people who would not see, would not hear, would not sense the knowing, and so did not become models of risk taking based on a vision. However, leaders are called to vision and to help bring about new and better realities. The implication from this study is simple; leaders need to be creative visioning people who support and develop creative visioning in self and others.

If the very existence of the world is involved, if the deepest kind of knowing is involved, if the most profound sense of touching with the core of life is involved, then creativity must be supported, nurtured, and developed within schools. At the very least, schools should not contribute to the bitterness found in the words of some of those interviewed. As those interviewed suggested, schools should become proactive in their support of this ability and process. Perhaps students could become artists because of school, rather than in spite of it. This means institutions must move into "ambiguous" places and not have all the answers. Mistakes will be made, but growth will occur. If fear is allowed to block these attempts, educational institutions will remain as they have been and continue to produce bitterness, tears and rage. For educational institutions, the message is to listen to the creative visioning of individuals and move to develop, support, and nurture individuals and a sense of collective creative visioning.

There is hope and perhaps the challenge will be met. Each person can celebrate and nurture creative visioning. The need for leaders to do this seems self-evident. Since schools touch and help form so many people, the critical need of creative visioning must be nurtured and supported within our educational institutions. The call is being sounded. The question now is who will answer.

On a small scale each person can answer the call by taking an initial step. Individuals could interview another person and talk about the creative visioning process. As one interviewee said, it is one thing to speak of water and another to be wet. For personal growth and a personal touch of creative visioning, the process of sharing, discussing, and experiencing creative visioning often is of great value.

Beyond the reiteration for further study and for a personal experience with creative visioning comes recommendations for leaders and schools. The call for creative leaders is great. They need to be risk takers who help create environments that support and nurture creative environments that support and nurture creative visioning. Structures should not be so rigid as to prevent new discoveries, new answers, and new connections. Leaders who trust this ability in themselves help others trust this knowing that comes from deep within oneself. Leaders can help to eliminate educational environments that foster criticism, rigidity and fear - all blocks to creative visioning. Most importantly, leaders should become creative visioning people who trust this process in themselves and do all that is possible to ensure that conditions for others to engage in creative visioning are present. They need to be helpful, supportive and nurturing of this most crucial ability.

Finally, the recommendations must move to schools, perhaps the most important places for nurturing and support. Schools need to create environments that promote, support, nurture and celebrate creative visioning. They need to provide those first encounters and ongoing connections to all sorts of creativity - music, art, painting, drama, dance, poetry, fairy tales, pretend games and more. In an environment constantly touched by creativity, schools need to promote risk taking, imagination expanding activities, and a climate of openness. In places where it is all right to make mistakes, new discoveries and delights can more easily happen.

In a place where many answers are possible, new connections can more easily occur. In a place where creative visioning is supported, nurtured and celebrated, creative visioning can more easily happen. Teachers and administrators (teachers with students and administrators with staff and students) need to create an environment free of fear; structured but not rigid; tied to history but not chained to one answer; open to new discoveries, connections and delights; respectful of the individual but aware of a communal aspect of being; touched by the arts, creativity, imagination and the dance of life; filled with a joy and zest for life and learning that promotes risk taking and develops courage to see differently; and ready to be receptive to the wonder and awe of the dance and the spiritual/mystical connections so much a part of creative visioning. Creative visioning is critical and individuals, administrators, educational leaders, and schools should move to do all that is possible to promote, nurture, develop, and celebrate this most critical ability.

The Risk in College Classes

The author of the study continues to hold that creativity is critical to growth and learning. However, most education systems seem resistant to change and seem to view promoting creativity as too risky or not of value. It might also be said that the higher the education level the more resistant to change becomes the norm. The author is often greeted in the halls of the college, as he goes to both undergraduate and graduate classes with paints and colors, with critical and often biting comments. "Are you going to do any teaching or just playing around?" are common greetings. Nonetheless, even without full support he continues, on a small scale, to implement activities designed to encourage creativity in the college classes that he teaches.

Students often indicate that they feel awkward and uncomfortable engaging in activities designed to promote risk taking and creativity, especially at the beginning of the classes. The students are asked to learn, to demonstrate learning, and to assess learning through creative and risk-taking methods. They self design projects, use portfolios to validate learning, work in pairs and groups, and use alternate ways of learning suggested by Gardner (1983,1993) and Lazear (1991). The results are poems, skits, plays (sometimes on video), drawings, songs, visual presentations, and body/kinesthetic demonstrations. The first steps are awkward, but providing opportunities to work in groups is important in helping the students through these first attempts. The key aspect of the group's purpose is to be supportive. However, college-level students have been in an educational system that is consistent and has rigid standards. Many of these students have been successful in that system and find the first steps a challenge. It takes courage and commitment on the instructor's part as the process is initiated and then courage and commitment on the part of the students as new challenges are introduced. There are moments of fear and temptations to revert to a content information-driven approach. In that moment, the research term paper as a project may appear to be an easy out for both instructor and students. But then the creative projects and work begins and both students and instructor are in awe.

The learning process continues and the author continues to be impressed by working with the students. The students evaluate the course very positively and state that they learned much about the material and even more about themselves and the nature of creativity. The students' evaluations serve as an indicator to suggest that this pedagogical approach is of value. It is perhaps more important to experience the plays, the poems, the drawings and to hear the students discuss the process. It is even more important to hear from students a few years later stating that they are still involved in the process of creativity and the goals of striving to make connections. Because many of them are teachers in K-12 classes there is hope because they touch so many people who are beginning their creative journey.

There is always hope when one sees a child fly a kite and experience the joy of a new discovery. It is in the quiet of that special place that a deep sense of knowing can come that sees the dance of life. From the child learning, making connections, taking leaps - from creative visioning can come a rich picture of the dance. Creativity and creative visioning are critical and enrich the learning in classes at all levels. A student recently stated that she never was asked to trust herself more, nor felt as strongly that clouds were blown away, as she did in these courses that stressed creativity. Clearly, college classes are a place where the poet and the artist are much needed.

I listened...
and the dance was heard
deeply, deeply...
and the wonder grew

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